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Loan loss provisions and pro-cyclicality: the case of Commonwealth of Independent States (CIS).

By

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Abstract

In the light of the recent global crisis the disputes related to the pro-cyclicality of banks' loan loss provisioning behaviour became one of the widely discussed topics in existing research. The core idea of the problem states that banks create fewer provisions during good times while during bad times provisioning level significantly increases which leads to the decline of lending in the economy at the same time as the country desperately needs credit from the banks. Previous empirical research documented cases of pro-cyclical bank provisioning behaviour. In this research loan loss provisions of CIS banks have been examined for the presence of pro-cyclicality. Following the outcomes of existing research we have tested three hypotheses: the pro-cyclicality hypothesis, income smoothing and capital management hypotheses. Based on the sample of 64 commercial banks from Kazakhstan, Russia and Ukraine which have the most advanced banking systems among CIS countries the results indicate confirmation of pro-cyclical loan loss provisioning behaviour. However our empirical results have revealed signs of counter-cyclicality in provisioning systems of CIS banks, because the Russian regulation for standard loans from homogenous group and Ukraine for all standard loans obliges banks to create general loan loss provisions. However we have not documented income smoothing among CIS banks and test results have shown that loan loss provision changes fail to relate to the changes of earnings before taxes and provisions. Capital management hypothesis has been confirmed meaning that CIS banks use loan loss provisions for improvement of their capital ratios.

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Introduction

The main negative result from bank's pro-cyclical behaviour is a reduction in lending during downturns which reinforces the momentum of underlying economic cycles' (Gonzales, 2009, p.1). According to Beatty and Liao (2009), the reasons for the pro-cyclicality of bank lending can be capital market imperfections, capital regulation and pro-cyclicality of loan loss provisioning. The latter reason has been a widely discussed topic in recent empirical research.

Discussions started from the hypothesis that capital regulation has an impact on the pro-cyclicality of the countries' economies. (Laeven & Majnoni, 2003). This implies that during economic downturns banks experience a deterioration of the quality of assets which leads to a contraction of capital and a worsening of the capital ratio. Consequently in terms of the limited access to capital markets banks have to decrease lending in order to comply with capital regulations (Bikker & Metzemakers, 2005). In a recession the country's economy is sensitive to the lower volume of credit therefore ultimately the fact of a decline in lending leads to a further worsening of the macroeconomic situation. Some researchers conclude that loan loss provisions also play a role in the creation of the economy's pro-cyclicality because of the interrelation between provisioning and capital and therefore the business cycle. (Laeven & Majnoni, 2003; Bikker&Metzemakers, 2005, Bouvatier & Lepetit, 2008).

The main observation to emerge from research is that banks tend to increase loan loss provisions during the economy's downturns and decrease the provisions during upturns (Laeven & Majnoni, 2003, Bikker&Metzemakers, 2005, Bouvatier&Lepetit, 2008). Since the creation of loan loss provisions relates to the decrease of the banks retained earnings, which are one of the sources of capital growth, bank capital declines as soon as provisions increase. Therefore when banks are faced with the danger of the capital ratio's violation they start to decrease their lending level. Such provisioning behaviour is considered as pro-cyclical because ultimately during bad

times it results in shrinkage of the bank's lending and becomes the reason for further deterioration of the countries macroeconomic situation.

However other research reveals counter-cyclical provision behaviour (de Lis et al, 2001) or even a combination of both counter-cyclical and pro-cyclical provisioning (Galindo & Rojas-Suarez, 2011). The most notable evidence of counter-cyclical provisioning behaviour is the experience of the Spanish banks. Spain implemented special regulations for the loan loss provisions and in this way left less opportunities for discretional actions by the bank managers in creation of loan loss provisions. According to the regulation Spanish banks must create more provisions during good times to be used during bad times and in this way lessen the pressure on the banks profitability and therefore on its capital.

This paper aims to test the loan loss provisioning behaviour of CIS banks. The CIS banking sector is relatively young compared with mature USA or European banking systems which have largely been the focus of recent research (Laeven & Majnoni,2003; Bikker&Metzemakers, 2005; Bouvatier&Lepetit,2008; Kanagaretnam et al,2003). Only 20 years have passed since the creation of the CIS following the collapse of the USSR. In this period CIS nations had to undergo a transition from a command to a market economy and started to implement international standards concerning the conduct of business and the economic environment at a rapid pace. Therefore we believe that our research could be helpful in understanding loan loss provisioning behaviour in young emerging markets such as among the countries of the CIS and we will be able to highlight the extent to which the predictions of empirical studies are supported in the case of CIS banks.

Most existing research examining the relations between bank provisions and pro-cyclicality tests three hypotheses: the first hypothesis, that provisions have a pro-cyclical effect on the country's economy; the second, the income-smoothing hypothesis and the third, the capital management hypothesis. The present study will test the above hypotheses with reference to CIS countries. The

pro-cyclicality hypothesis is the central issue of our paper since we intend to discover whether CIS bank loan loss provisioning behaviour is related to a worsening of the macroeconomic situation during downturns in the countries under consideration. Income-smoothing and capital management are two divergent bank actions by their impact on the pro-cyclicality of loan loss provisions. Income-smoothing to some extent mitigates (Bikker&Metzemakers, 2005) while capital management strengthens the pro-cyclical effect of the loan loss provisioning behavior (Bouvatier&Lepetit,2008). As far as we are aware there has been no research conducted on the bank provisioning behavior of CIS banks. The following research is based on a sample of sixty four commercial CIS banks. Countries such as Kazakhstan, Russia and Ukraine noted as the countries with the most developed banking system of the CIS countries and form a sound sample of the CIS banking system.

The research uses regression analysis and tests the model consisting of bank-related and macro-economical variables which have been used by previous empirical research (Laeven & Majnoni, 2003, Bikker&Metzemakers, 2005, Bouvatier&Lepetit, 2008). However taking into account peculiarities of banking system and the economic environment of the CIS region the model employs additional independent variable which we believe has an impact on the provisioning behavior of the CIS banks. The structure of this paper is as follows. Chapter 1 is devoted to the theory and literature review. Chapter 2 makes reviews the economic situation of each of the countries under consideration**.** Chapter 3 describes the data and the model used for regression analysis. Chapter 4 contains the empirical results of our research and our conclusions.

Chapter 1: Theory and literature review.

In order to mitigate the negative impact of possible crises banks create 'two shock absorbers: loan loss reserves and capital' (Laeven&Majnoni, 2003, p.195). Loan loss reserves according to Laeven&Majnoni **(**2003**)** aim to cover expected losses while unexpected losses, which are less predictive and infrequent, should be covered by the bank's capital. Loan loss reserves are

formed through the loan loss provisions and are included in the asset side of the bank's balance sheet. Increase of loan loss reserves accumulates through loan loss provisions while write-offs decrease the size of reserves. Loan loss provisions are created by means of the bank's income and are therefore considered as an expense.(UPLIFT, 2001) Loan loss provisions consist of two categories: general provisions which form a part of the bank's capital and specific loan loss provisions (Laeven&Majnoni, 2003). Specific provisions are also called 'ex-post' provisions since they are created if loans have overdue repayments. General provisions are created for the entire loan portfolio and are considered as 'ex-ante' provisions because they cover future possible losses. General loan loss provisions are included in Tier 2 capital and formed from after tax earnings. (Laeven & Majnoni, 2003).

In the light of crises experienced by the world over several decades the connection between bank provisioning and pro-cyclicality of the countries' economies has become a widely discussed topic in recent research. Empirical research devoted to this theme found evidences of both pro-cyclical and counter-cyclical provisioning behavior of the banks since each country follows its own provisioning policy.

In order to determine whether bank provisioning contributes to the pro-cyclical process in countries' economies, research mainly tests three hypotheses: the pro-cyclicality hypothesis tests relationships between loan loss provisions and business cycle and two other hypotheses: capital management, which contributes to the problem of pro-cyclicality and the income smoothing hypothesis, which, on the contrary, smoothes pro-cyclicality of provisioning behavior (Laeven & Majnoni, 2003, Bikker&Metzemakers, 2005, Bouvatier&Lepetit, 2008).

1.1.Pro-cyclicality hypothesis

According to Gonzales (2009) bank's pro-cyclical provisioning behavior means that during boom periods banks decrease the level of provisioning and expand their lending while during downturns they act in the opposite way. Such bank behavior 'reinforces the momentum of

underlying economic cycles' (Gonzales, 2009, p.1). However the theory of counter-cyclicality is based on the idea that credit risk is accumulated by banks during economic upswings and therefore should be recognized and covered by the appropriate provisioning level in order to create a buffer for bad times. (Bikker&Metzemakers, 2005) Dynamic provisioning policy implemented in Spain is a vivid example of counter-cyclical provisioning behavior (de Lis et al, 2001). Therefore in order to confirm or reject the pro-cyclicality hypothesis most studies test correlation of loan loss provisions and business cycles represented mainly by macroeconomic data. Empirical research largely finds two reasons of pro-cyclical provisioning behavior of banks. They are capital regulation and accounting standards.

As has been previously mentioned, the provisioning system closely relates to the bank's capital. According to Cavallo & Majnoni (2001) their interrelation can lead to pro-cyclicality problems in the economy, namely when loan loss provisions do not cover expected losses during economic downturns, capital should compensate both expected and unexpected losses. In such cases banks are faced with the consequences of inadequate provisioning levels which leads to a significant shrinkage of capital. Since capital increase can be expensive during recession, banks start to control their compliance with capital regulation in order to avoid capital ratio violation. Ultimately banks reduce the volume of lending which in its turn further deteriorates the macroeconomic situation in the country. Cavallo & Majnoni (2001) suggest that elaboration of provisioning regulation as a part of capital regulation can be a method of overcoming the problem of provisioning pro-cyclicality since 'a capital regulation without sound provisioning rules may have pro-cyclical effects' (Cavallo & Majnoni , 2001, p 2).

Sood (2011) conducted his research on the basis of US banks between 2001 and 2009 and finds evidence of pro-cyclical provisioning behavior. He argues that pro-cyclicality of loan loss provisions is caused by the peculiarity of the US accounting system which does not allow the creation of provisions for future losses. This approach is based on a backward looking

provisioning model which recognizes losses post facto. As a result at the moment of economic downturn banks create more provisions due to the loan portfolio's depleted quality therefore decreasing the bank's capital. Eventually banks have to shrink their lending to comply with capital regulation. Sood (2011) argues that the dynamic provisioning model is able to solve the problem of pro-cyclicality because it implies that creation of loan loss provisions should be positively correlated with the loan growth or in other words, the provisioning level should be increased during economic upturns in order to create a buffer for the bad times.

The research of Fillat & Montoriol-Garriga (2010) is based on US bank data. It supports Sood's (2011) and Cavallo & Majnoni's (2001) studies since they agree that pro-cyclicality of provisioning, is embedded in the capital regulation and accounting standards. As it has been widely discussed in recent research, the dynamic provisioning model is able to solve the problem of pro-cyclicality. However, Fillat & Montoriol-Garriga (2010) come to the conclusion that if US banks implemented dynamic provisioning systems it would not prevent them from the negative consequences they experienced during the recent crisis. Their main idea is that 'effectiveness of dynamic provisioning depends on severity' of the shock that the country's economy faces during downturns (Fillat & Montoriol-Garriga, 2010, p.12).

Laeven & Majnoni (2003) test the hypothesis of inadequate loan loss provisioning among a large sample of banks from different countries and find confirmation of pro-cyclicality in their provisioning behavior since banks show a tendency to increase (decrease) provisions when lending levels and GDP growth declines (go up). However they document the income smoothing hypothesis which in its turn mitigates pro-cyclical provisioning behavior.

Bikker & Metzemakers (2005) also document the evidence of pro-cyclical effect of provisions among banks from OECD countries. However they find confirmation of the income smoothing hypothesis and positive relationships between the loans growth and loan loss provisions which have counter-cyclical effects on bank provisioning behavior. Bouvatier & Lepetit's (2008)

research shows the macroeconomic influences on the pro-cyclical provisioning behavior of banks from OECD countries. Worsening of economic conditions in the country leads to a worsening of the borrower's ability to repay loans and therefore increases the number of bad loans. In such situations banks start to create more provisions in order to be able to cover their losses and reduce their lending.

Counter-cyclical provisioning systems or dynamic provisions have been adopted by Spain in 2000 (de Lis et al, 2001). According to de Lis et al (2001) Spanish banks, apart from general and specific provisions, must create the third category of provisions for covering expected losses. Statistical provisions act as a buffer fund and therefore negatively correlated with specific provisions for compensation of ex-post credit risk. This means that during downturns when specific provisions increase, statistical provisions decline since they are used to smooth earnings. Statistical provisions are defined as the difference between 'latent global losses' and specific provisions (de Lis et al, 2001, p.13). Moreover Spain elaborated detailed provisioning regulations aimed at excluding all possible manipulations with provisions by bank managers.

Galindo & Rojas-Suarez (2011) surveyed seven Latin American countries and confirmed that some countries such as Peru, Uruguay and Bolivia adopted dynamic provisioning models while others including Colombia combine elements of both counter- and pro-cyclical models .

1.2. Capital management hypothesis.

As per Zhou Yunxia, (2007) the necessity of balancing capital regulation and the cost of capital gives stimulus for banks to use capital management. The aim of capital for any bank is to cover unexpected losses. However because of capital costs there is a possibility that banks will not hold enough capital to cover losses. Such bank behavior increases the risk of bank's insolvency which eventually can have negative consequences for the whole society. That is why bank regulations implemented a capital adequacy ratio: the higher ratio the better. Banks are required to be above the fixed minimum level of the ratio otherwise they receive sanctions for violation of

rules. Violation of capital regulation is a costly event for any bank which stimulates bank managers to apply for capital management. (Zhou Yunxia, 2007)

According to Bouvatier & Lepetit (2008), capital management relates to discretionary action. Capital ratio is the ratio of total capital to total assets. Capital management can be performed through the changes of ratio's nominator since any manipulation with the denominator is an expensive and difficult procedure. (Zhou Yunxia, 2007). Bouvatier & Lepetit (2008), explain that, as a rule, total capital consists of Tier1 and Tier 2 capitals. Tier 1 capital combines equity and retained earnings. Specific provisions reduce retained earnings and therefore the creation of provisions leads to shrinkage of capital and worsening of the capital ratio. If increase of specific provisions is made during an economic recession, entry into capital markets, as a rule, can be too expensive for banks. Therefore the option of issuance of additional shares is not the appropriate way-out. However taking into account that general provisions are included in Tier 2 capital banks can improve the capital ratio by increasing general provisions (Bouvatier & Lepetit, 2008; Bikker&Metzemakers, 2005). Overall such discretionary actions do not decrease the risk of banks' insolvency and is therefore called capital management.(Bouvatier&Lepetit, 2007)

The confirmation of the capital management hypothesis differs due to the fact that different models and methods were used. However capital management is mainly confirmed if there is a negative correlation between the independent variable, capital ratio with nominator consisting from sum of Tier 1 and Tier 2 capitals less general loan loss provisions and the dependent variable, loan loss provisioning, which hereinafter is considered as the sum of specific and general provisions. The negative sign of the independent variable's coefficient implies that when capital ratio decreases banks tend to increase their general provisions and vice versa (Zhou Yunxia, 2007). In addition capital management is documented in the case of a positive correlation between Tier 1 capital ratio and loan loss provisions meaning that low capital levels leads banks to decrease provisions(Zhou Yunxia, 2007).

Bikker & Metzemakers' (2005) research confirms the capital management hypothesis for a sample of banks from 29 OECD countries. However they do not exclude the fact that negative correlation between loan loss provisioning and capital ratio can be a result not only of capital management but also a consequence of the poor quality of loan portfolios which leads banks to create more provisions. It is worth mentioning that Bikker & Metzemakers (2005), separate loan loss provisions and loan loss reserves using them as dependent variables in two different models. Their results conclude that the relationship between loan loss provisions and capital ratio for their sample contributes to the confirmation of capital management hypothesis more than the relationship between loan loss reserves and capital ratio. From their point of view this is because provisions are more related to managerial decisions than loan loss reserves.

Kim & Kross (1998), investigate whether changes made in capital regulation after 1989 influenced bank managers' decisions to manipulate capital ratio. They find that excluding loan loss reserves from primary capital used as regulatory capital before 1989 and including them in Tier 2 capital after 1989 stimulated poorly capitalized banks to decrease loan loss provisions in order to increase Tier 1 capital and therefore improve capital ratio. For well capitalized banks they do not find significant differences before and after the capital regulation changes.

Bouvatier & Lepetit (2008), find that banks with low levels of capital tend to decrease loan loss provisions, which is evidence of using capital management among European banks in the period 1992-2004 therefore after the implication of changes in capital regulation. In this sense their results are similar to those of Kim & Kross (1998).

Ghafar Ismail & Tan Be Lay (2007), confirm the capital management hypothesis for Malaysian banks. Increase of loan loss provisions decreases retained earnings and therefore decrease Tier 1 capital, however in this way banks are still able to increase Tier 2 capital since general provisions constitute an element of Tier 2 capital. This means that Malaysian banks use general provisions to improve capital adequacy ratio. However such tactics work if general loan loss

provisions are not more than 1. 25% of risk-weighted assets, otherwise the result of manipulation with loan loss reserves can be opposite to that expected.

Zhou Yunxia, (2007), find that Tier 1 capital and loan loss provisions are positively correlated meaning that banks with low Tier 1 capital tend to decrease loan loss provisions. This result corresponds to the results of Kim & Kross (1998), and Bouvatier & Lepetit (2008), in spite of the different methods used for testing the hypothesis. Zhou Yunxia (2007) also confirms a negative relationship between loan loss provisions and Tier 2 capital meaning that the banks in their sample are using capital management. This evidence is consistent with Ghafar Ismail & Tan Be Lay's, (2007) conclusions.

Perez et al (2008) fail to find confirmation of the capital management hypothesis for Spanish banks. They draw attention to the fact that bank's incentives to manipulate with provisions in order to comply with capital ratio in most cases depends on the accounting base and capital regulation of each country. In 2000 Spain implemented new capital regulation which excluded general loan loss provisions from regulatory capital. In many countries specific loan loss provisions are created on the basis of loans classification (WB, 2003). Classification of loans in turn is in most cases discretional procedures that therefore leaves opportunity for manipulation. In Spain the majority of loan classifications and the creation of both specific and general provisions are strictly determined by the regulation preventing attempts for capital management. Spain implemented dynamic statistical provisioning which implies the creation of more provisions during upturns and using accumulated funds during downturns.

1.3. Income smoothing hypothesis.

Bouvatier & Lepetit (2008) consider income smoothing as another discretionary action. The main idea of income smoothing is that bank managers use loan loss provisions to hide the real volatility of bank earnings in a way which is beneficial for them. The negative side of this tactic is underestimation of loan loss provisions which do not cover expected losses in a proper way.

The positive effect is that overall it follows almost the same pattern as dynamic provisioning system, namely banks create more provisions during boom times while decreasing provisioning levels during downturns therefore decreasing the cyclicality of provisions.

Kanagaretnam et al (2003) document income smoothing among US banks during the period from 1987 to 2000. They also empirically confirm that 'job security concerns' the demand of external financing and peculiarity of regulation influence the bank mangers' incentives to smooth earnings. The first reason for income smoothing relates to the concerns of managers over their jobs due to weak performances of banks during the bad times which caused them to decrease provisions during recession or, in other words, to borrow funds from the future good times and decrease provisions when the crisis passes. All in all such managers report smooth profitability. The second reason lies in the willingness of banks to borrow external funds at lower prices since less volatility in bank earnings signals good bank performance to investors and therefore less risky investments. The third reason relates to the bank regulation which treats banks differently depending on the level of their capitalization. For example, well-capitalized banks are inspected less frequently than adequately capitalized banks therefore they have incentives to smooth earnings. In addition to the already mentioned reasons Laeven & Majnoni (2003), name tax incentives meaning that the creation of loan loss provisions leads to a fall in taxable income therefore increasing the bank's tax savings. Laeven & Majnoni (2003) with reference to Goel and Thakor (2002) argue that income smoothing also diminishes the desire of investors to obtain private information and therefore decreases shareholder losses. Overall their research confirms the existence of income smoothing in their large sample consisting of banks from developed and emerging countries. Bikker & Metzemakers (2005) and Ghafar Ismail & Tan Be Lay (2007) confirm income smoothing for banks from 29 OECD countries and for Malaysian banks respectively. Bhat (1996), emphasized that banks with weak financial performance tend to smooth their earnings.

Bouvatier & Lepetit (2008), do not in general find evidence of income smoothing since their results show that banks do not increase their provisions when earnings before taxes and provisions increase. However for banks with good performance they document signs of income smoothing which contradicts to the findings of Bhat (1996). Ahmed et al's (1999) research differs from other reviewed papers by their attempt to define whether relationships between earnings and provisioning have changed since new capital regulation were implemented in 1990. According to their hypothesis new regulations which excluded loan loss provisions from the primary capital should decrease the cost of manipulation with provisions for earning management. The main idea is that in terms of new capital regulation banks could benefit from income smoothing without violation of capital adequacy that is greater than prior to its implementation. For example decrease of provisions can lead to increase of Tier 1 capital and decrease of Tier 2 capital if the size of the bank's loan loss reserves does not exceed the allowed upper bound of reserves while under the old regime decrease of provisions would lead to a worsening of the capital ratio. However Ahmed et al (1999) did not find evidence of income smoothing in their sample during both old and new regimes of capital regulation.

Perez et al (2008) researched data from Spanish banks for the period from 1986 to 2002. Spain in 2000 implemented a new dynamic provisioning system which uses almost the same mechanism as income smoothing. The main difference is that dynamic provisioning is a prescriptive action regulated by the rules while income smoothing is discretionary and therefore considered as manipulation by the management. Perez et al (2008) argue that statistical provisioning is a 'transparent smoothing device' (Perez et al, 2008, p.427). Nevertheless they find confirmation of income smoothing for Spanish banks. However additional tests show that sensitivity of provisions to net operating income becomes less after 2000. Zhou Yunxia (2007) confirms the hypothesis of income smoothing in their sample. He discovers a positive correlation between provisions and earnings which implies that banks decrease loan loss provisions when the earning level is low and vice versa. In addition Zhou Yunxia (2007) finds that if banks with a similar

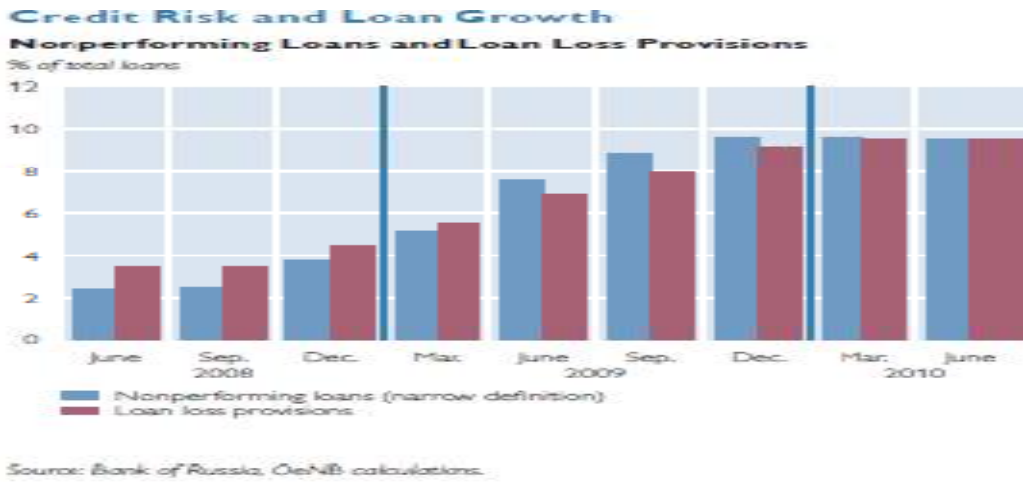
level of Tier 2 capital have negative earnings growth in comparison with the previous period, they tend to decrease provisioning for increase of earnings rather than to increase provisions in order to improve capital ratio through Tier 2 capital.

1.4. Literature review: provisioning behavior of CIS banks.

To the best of my knowledge no academic papers have been devoted solely to the testing of the above mentioned hypothesis on CIS banks. However we can conclude from the existing articles related to the banking systems of Russia, Kazakhstan and Ukraine that concerns about pro-cyclical banks behavior exists and has been considered by the related authorities.

Hsieh et al's (2008) research is based on a number of countries. They note that Russia is among countries where general loan loss provisions are part of Tier 2 capital and the compulsory level of loan loss provisions are fixed by regulations for the standard loans. These two factors Hsieh et al (2008) relate to the income smoothing hypothesis. Their empirical evidence suggests that countries with regulation systems which determine a minimum level of provisions for standard loans demonstrate a confirmation of the income smoothing hypothesis and their provisions relate less to the business cycle than in the countries which do not have such regulation. However Russian banks were not included in the sample due to the lack of observable data. Barisitz &Lahnsteiner (2010) point out that loan classification, the provisioning system and accounting standards in Russia are based on the backward looking approach. According to Sood (2011) the backward looking approach is a sign of the pro-cyclicality of loan loss provisioning behaviour since it does not allow the creation of loan loss provisions beforehand. Barisitz &Lahnsteiner (p. 82, 2010) graph below indicates the backward looking provisions in Russia which follow the same dynamic as non-performing loans.

Graph 1. Loan loss provisions in Russia.



However a World Bank survey (2003) states the requirement of loan loss provisions for standard loans, as in Russia, can be a sign of the forward-looking approach. In addition it is mentioning that Ukrainian regulations also fix the minimum rate of provisions for a standard category of loans (National Bank of Ukraine, 1998). Lee & Haque (2011) based their research on the example of Kazakhstani banks which they observed between 2007 and 2010. They state that bank capital regulation in Kazakhstan is pro-cyclical meaning that it negatively influences loan growth during economic downturns. Decrease of lending levels during periods of poor economic performance generally leads to a deeper recession in the country (Gonzales, 2009).

Therefore we can expect that the provisioning behavior of Kazakh banks could be pro-cyclical since, as previously mentioned, pro-cyclical capital regulation could account for the loan loss provisions. Accounting rules in Russia are based mainly on the backward looking approach therefore provisioning behaviour in this country is more likely to be pro-cyclical. However, as mentioned before Russia and Ukraine have signs of the forward looking approach in their provisioning regulation which may indicate the existence of evidence mitigating the banks pro-cyclical provisioning behavior. Since Russian and Ukrainian banks constitute the largest part of the sample we suggest that our empirical results will be driven to a greater extent by these

countries. The other hypotheses, to our knowledge, have not been discussed with reference to CIS banking systems in existing research.

CHAPTER 2: Review of CIS region

The CIS was formed in 1991 after the Soviet Union's collapse. The CIS region includes 11 countries as of 2011. They are Russia, Kazakhstan, Ukraine, Belarus, Tajikistan, Turkmenistan, Uzbekistan, Kyrgyzstan, Azerbaijan, Armenia and Moldova. All CIS members signed an Agreement on economic union which implies the unconstrained movement of the labor force, capitals, goods; elaboration of agreed tax, custom policies and elimination of differences in methods regulating economic activity of the member-countries. (Intergovernmental statistical committee, 2011). According to the Expert Ra, rating agency (2007), as of 2007 Kazakhstan, Russia and Ukraine were the leading countries in CIS banking sector by economic characteristics and their demand for the ratings services. This can be seen from Table 1 and 2 below.

Table 1. Activity of the international rating agencies in the banking sector of CIS countries

Country	**Number of banks rated by Fitch**	**Number of banks rated by Moody's**
Azerbaijan	3	3
Armenia	1	2
Belarus	5	0
Kazakhstan	12	15
Kyrgyzstan	0	1
Moldova	0	0
Russia	44	65
Tajikistan	0	0
Turkmenistan	0	0
Uzbekistan	1	0
Ukraine	16	24
As of 15.04.07. Sources: websites of Moody's Investor Service, Fitch IBCA		

(Expert Ra, rating agency, 2007)

Table 2.Comparison of the economic characteristics of CIS countries:

Country	Assets of bank.sector (bln USD)	Credits of bank. sector (bln USD)	Depos. of bank. sector (bln USD)	Capit. of bank. sector (bln USD)	Increase of real GDP (%)	The size of nominal GDP (bln USD)	GDP per pers.(th. USD)	Infla-tion (%)
Russia	533,4	305	321,6	64,3	6,8	1017	7,1	9
Kazakhstan	69,9	41,5	38,7	6,9	10,6	77,9	5,1	8,6
Ukraine	67,4	48,6	36,5	8,4	7,1	106	2,3	11,6
Belarus	13,6	9,2	6,8	2,1	9,9	37	7,8	6,6
Uzbekistan	5,8	3,9	3	0,8	7,8	16,8	0,6	6,8
Azerbaijan	4,3	2,4	2,4	0,6	34,5	20,4	2,5	11,4
Moldova	1,8	1,1	1,3	3	4	3,4	0,9	14,1
Armenia	1,4	0,7	0,9	0,3	13,9	6,4	2	5

(Source: Expert Ra, rating agency,2007)

Our research will focus on these three leading CIS countries since data from these countries illustrate the main trends in the CIS banking sector.

2.1. Kazakhstan.

2.1.1. Economy

The Republic of Kazakhstan is rich in mineral resources and vast agricultural lands usable for grain production and live farming. Mining is the main source of the country's economic growth and oil and gas are the leading economic sectors (Wikipedia) According to International Monetary Fund's (IMF) report (2010) in 2009 Kazakhstan was the 18th largest oil producer in the world and second after Russia among CIS countries. The IMF reported that one quarter of the nation's GDP was from oil production which constituted 60 % of the total export and 40% of the country's budget. 'Proven reserves are now estimated at 30 billion barrels (similar to Nigeria and exceeding Algeria, Mexico and the United States) due to the discovery of oil in the Kashagan field in the Caspian Sea' (IMF, 2010, p.11). Agriculture is also a promising sector of the economy. Kazakhstan is the third largest grain producer in the CIS region after Russia and

Ukraine (Wikipedia). According to the IMF report (2010) by 2014 it is estimated that the agricultural sector will satisfy 80% of domestic food demand. Kazakhstan was the first country in the CIS region to obtain an investment grade from international rating agencies such as Moody's investors' service, Standard & Poors, Fitch rating Ltd (Ministry of economic development and trade of Kazakhstan (MEDT), 2010). The development of the country's rating can be seen in Table 3.

Table 3. Country rating of Kazakhstan.

Rating agency	2004	2005	2006	2007	2008	2009	2010
Moody's investors service (government bonds)	Baa3/NP	Baa3/NP	Baa2/NP	-	-	Baa2/-	Baa2/-
Standard&Poors	BBB-/A-3	BBB-/A-3	BBB/A-3	BBB-/A-3	BBB-/A-3	BBB-/A-3	BBB/A-3
Fitch rating Ltd	BBB-/F3	BBB/F3	BBB/F3	BBB/F3	BBB-/F3	BBB-/F3	BBB-/F3

Source: Ministry of economic development and trade of Kazakhstan, 2010

Table 4. Main macroeconomic figures for Kazakhstan

Indexes	2004	2005	2006	2007	2008	2009	2010
GDP (USD bln)	43,2	57,1	81	104,9	133,4	115,3	146,9
Real GDP growth (%)	9,6	9,7	10,7	8,9	3,3	1,2	5,4
Inflation, consumer prices (annual,%)	6,9	7,6	8,6	10,8	17,2	7,3	7,8
Unemployment rate (%)	8,4	8,1	7,8	7,3	6,6	6,6	5,8

Source: International Monetary Fund

In general, as Table 4 indicates macroeconomic figures show economic growth in Kazakhstan during the period from 2004 to 2006 meaning that GDP increased from $43.2 in 2004 to $81 billion in 2006 while unemployment decreased over the same period from 8.4% in 2004 to 7.8% in 2006. However inflation increased reaching 8.6% in 2006 compared to 2004 when it was 6. 9%.

From 2007 to 2009 real GDP growth declined significantly, starting fall from 10.7% in 2006 to 1.2% in 2009. This negative dynamic in the economic growth was a reflection of the global financial crisis. In 2010 real GDP growth increased up to 5.4% which according to the Kazakh government was caused by the favorable conditions on the global market for metal and power resources; the implementation of timely anti-recessionary measures and creating a basis for further post-recessionary actions.

2.1.2. Banking system

Kazakhstan has a two-tier banking system represented by the National Bank of Republic of Kazakhstan (NBRK) as the first tier and remaining banks constituting the second tier. The exception is the Development Bank of Kazakhstan which operates under a special law (Wikipedia). As of the end of 2010 there were 39 second-tier banks including the one state bank and thirty eight commercial banks, twenty of which are banks with foreign participation (Financial Supervision Agency of Kazakhstan (FSA),2011)

According to the IMF report (2004) positive economic growth in the early 2000s and reforms implemented in the financial sector played an important role in the further formation of a sound banking system in Kazakhstan. One of the most important and challenging steps made by the country was the implementation of international banking standards. For example, Basel I Capital Accord was adopted in 1996 (Pirani, 2011), in 2003 banks were obliged to use International Financial Reporting Standards (IFRS) (IMF, 2004). Consequently, these events entailed improvements in bank supervision as well as in their risk management systems (IMF, 2004). Basel II rules were adopted in 2005 (Peresetsky, 2010). Regulation on the basis of Basel III is planned by regulator to implement in Kazakhstan in 2013 while Basel Committee's deadline is 2019.(Pirani, 2011).

Apart from favorable economic conditions in the country during pre-crisis period, which improved to some extent the standard of living of Kazakh people, growing confidence in banks

among the population as well as the creation of a Deposit Insurance Fund, all these factors influenced significant deposit growth. The main indicators of Kazakhstani banking sector can be seen in Table 5.

Table 5. Indicators of Kazakh banking sector

	2005	2006	2007	2008	2009	2010
Commercial banks (number)	34	33	35	37	38	39
Major indicators of the banking sector, US$ million						
Assets	33 701	69 859	97 129	98 432	77 837	81 614
Capital	3 297	6 854	11 846	12 026	-6 601	8 967
Loans	22 869	47 181	73 718	76 534	64 926	60 627
Provisions for loans	1 276	2 342	4 337	8 491	24 458	18 995
% of total loans	5,6	5	5,9	11,1	37,7	31,3
Deposits	12 471	24 979	32 451	38 084	40 441	46 850
Net profit	538	801	1 806	89	-19 225	9 904
Profitability ratios, %						
NIM	3,7	3,3	5,2	5,8	3,1	3
ROAA	1,6	1,1	1,9	0,1	loss	12,1
RoAE	16,3	11,7	15,2	0,7	loss	110,4
Banking sector and the economy, %						
Assets/GDP	59	86,2	92,6	73,8	67,5	55,6
Loans/GDP	40,1	58,2	70,3	57,4	56,3	41,3
Deposits/GDP	21,8	30,8	30,9	28,5	35,1	31,9

Source: Kazakhstan Financial Review December 2010, Kazkommertsbank

However deposit increase was not the only source of the credit growth in the banking sector: external borrowings formed a substantial part of the bank loan funding base. According to the IMF report (2010, p 3) between 2000 and 2007 Kazakh banks 'borrowed heavily abroad' in order to fund their credit expansion. By 2007 external debts of Kazakhstani banks reached 44% of GDP (Table 6).

Table 6. Bank external debt of Kazakhstan. **(Mln USD)**

	2004	2005	2006	2007	2008	2009	2010
Bank external debt	7 682	15 316	33 323	45 946	39 221	30 082	20 024
% of GDP	18	27	41	44	29	26	14

Source: National Bank of Kazakhstan, web-site

2.1.3. Financial crisis impact

Kazakhstan was the first country in the CIS region affected by the global crisis mainly because banks borrowed heavily from abroad in order to credit the country's economy (IMF, 2010). During the 2007 global crisis Kazakhstan faced significant external debts, which reached 44% of GDP in 2007 (Table 6). Limited access to external funds caused a decrease in lending levels which in turn caused a reaction with a decline in business and social conditions. As a result banks faced the problem of non-payments of credit, which was indicated by higher levels of non-performing loans from 3.5 % in 2008 to 26 % of the total loans in 2010 (IMF,2010). The growth of the non-performing loans resulted in increased provisioning levels from 6% of total loans in 2007 to 37 % in 2010 (IMF, 2010). Capital within the banking sector decreased from 11% of GDP to negative 3% of GDP in 2010 which was caused mainly by the significant increase of provisioning levels (IMF, 2010). The situation was worsened by a fall in commodity prices during mid-2008-2009, which led producers to decrease oil exports and other commodities (Nuttall,2008) . As a consequence GDP fell from $133 in 2008 to $115 bn in 2009 (Table 4). Four financial institutions, two of which were among the country's top ten largest banks, ceased payments of their external liabilities (IMF,2010).

The government elaborated an anti-crisis plan in 2008 which aimed to support the financial SME, agricultural and construction sectors. As of May 2010 the overall amount spent on anti-crisis measures equaled $10.7 bn (IMF,2010). The source of the funds was the National Oil Fund which was established in 2001 and aimed to accumulate oil income for future generations. Its main purpose is to decrease dependency on the budget funds during difficult economic (IMF survey, 2010).

By 2010 the restructuring of the three banks external debts was completed (FSA,2010) Overall the restructuring of external liabilities together with further regular external debt repayments by the other banks in terms of the limited access to the foreign borrowings led to a significant

decrease in the bank's total external debt from $45.94 million in 2007 (44% of GDP) to $20.02 million in 2010 (14% of GDP) (Table 6) (IMF, 2010) . According Ivanova et al's (2010) research (2010) Kazakhstan was the first country in the CIS region which implemented counter-cyclical measures of financial institutions' regulation. Counter-cyclical methods include provisioning issues, increase of equity, reserves and liquidity and their usage during recessions. The FSA report (2010) notes that in 2012 Kazakhstan is planning to adopt dynamic reserves. Dynamic reserves aim to accumulate funds during booming economy and use them during recession which should lead to the lessen pressure on the banks profitability.

2.1.4. Loan loss provisioning:

According to the FSA (2006) specific provisions (reserves) must be formed by a bank in case of the assets depreciation caused by non-performing (or possible non-performing) or inadequate performing (or possible inadequate performing) of liabilities by a borrower as per contract conditions. For the purpose of the provisions' calculation all assets are divided into two groups: classified and standard assets. Standard assets are assets which are considered as normal ones without any danger of non repayment. Classified assets imply assets with non performed contract conditions or where there is a possibility of their breaching. Classified assets in their turn are divided into two groups: doubtful and bad assets. Classification of assets should be determined by banks depending on the financial state of the borrower, presence of the overdue payment under the classifying asset and borrower's rating which are also determined by the bank. Provisions should be created for all classified assets according to FSA requirements.

Provisions are calculated on the basis of the principal amount at the rate established by the regulators' less highly liquid collateral. Provisions are subject to reconsideration by the banks on the monthly basis. For classification purposes, credits are divided into individual credits, homogenous credits' portfolio, investment loans, mortgage and interbank credits.

Provisioning rate depends on the category of the classified assets (Table 7).

Table 7. Provisioning rate (in %) for Kazakh banks.

Group of credits according to classification	Credits to legal entities	Credits to individuals	Homogenous credits to legal entities	Homogenous credits to individuals	Investment loans	Mortgage	Interbank credits
	1		2		3	4	
1. Standard loans							
2. Doubtful loans :							
1) doubtful of 1st category – in case of timely and full payments	5	5	0,01- 5	0,01- 5	5	5	5
2) doubtful of 2nd category – in case of delay and partial payment	10	10	5,01 - 10	5,01 - 10	10	10	10
3) doubtful of 3rd category - in case of timely and full payments	20	20	10,01 - 20	10,01 - 20	20	20	20
4) doubtful of 4th category – in case of delay and partial payment	25	25	20,01 - 25	20,01 - 25	25	25	25
5) doubtful of 5th category	50	50	25,01 - 50	25,01 - 50	50	50	50
3. Bad loans	100	100	50,01 - 100	50,01 - 100	100	100	100

Source: FSA, 2006

General provisions are part of Tier 2 capital and should not be more that 1.25% of the risk weighted assets for calculation of the regulatory bank capital (NBRK,2002).

2.2. Russia.

2.2.1. Economy

Russia is the largest oil, gas and coal producer in the world. 'Russia's breakdown of GDP by composition shows a services-oriented country with a strong industrial base. 57.9% of the economy is driven by services, 37% by industry and 5.2% by agriculture' (EconomyWatch, 2011). The oil and gas sectors play important roles in the country's economy since it is one of the main sources of the country's revenues. According the Bogetic et al (2010) the sector formed 60% of the total country's export in 2007. Oil revenues in federal budget increased from 30% in

2004 to 46% in 2010. (The constructive project,2010). The oil and gas sectors formed 23.5% of GDP in 2008, 18.9% in 2009 and 22.9% in 2010 (Bashmakov, 2011) The countries dependence on oil and gas reserves had a negative impact since oil prices are usually volatile and difficult to predict. For example, oil prices fell from $140 per barrel in mid-2008 to $40-50 at the beginning of 2009 increasing $70 by the end of the year (Bogetic et al, 2010). As a result we can observe the same dynamic in GDP figures which grew in 2006 and 2007 before falling over the next two years (Table 8).

In order to mitigate the impact of oil price volatility impact on the country's budget part of the oil revenues were saved in a stabilization fund. The Stabilization Fund was created in 2004 and in 2008 was split into oil a Reserve Fund and National Welfare Fund. The accumulated revenues of oil Reserve Funds are used when oil prices fall (Wikipedia) As of the 1st February 2008 the Reserve fund had accumulated $125.19 billion while by the second half of 2011 this had fallen to $26. 60 bln (Ministry of finance of Russian Federation (MFRF), 2011), due to significant oil price decline during this period. Bogetic et al (2010) pointed out that creation of such funds was evidence of Russia's counter-cyclical fiscal policy, in contrast to the notion that that oil-dependent countries apply for pro-cyclical fiscal policy.

Bogetic et al, 2010, argue that oil rich countries gained access to capital markets and therefore increased their debt levels. Russia is not exception: between 2004 and 2010 the aggregate external debt almost doubled from $213. 45 million in 2004, to $489.043 million in 2010 (MFRF,2011). As with Kazakhstan external borrowings of Russian banks and private corporations constituted the largest part of the total country's debt (93. 4% in 2008 and 90. 6% in 2010). (Kosenkova, 2011). The main reason for increasing external private sector debt was the insufficient level of internal financial market development including the banking sector. Banks were unable to satisfy the economy's demand for long-term financing for the realization of large projects, besides this external funds were more favourable towards longer lending periods and cheaper prices (Kosenkova, 2011). Based on Table 8 we can see that the highest economic

growth within period from 2004 to 2010 was experienced by the country in 2007 when GDP reached the highest growth rate of 8.5%, inflation declined to its lowest rate of 9% and unemployment fell to 6.1 %. On the contrary in 2009 figures show evidence of the global crises with the lowest GDP growth and highest unemployment and inflation rates.

Table 8. Macroeconomic data, Russia

Indexes	2004	2005	2006	2007	2008	2009	2010
GDP (USD bln)	591	764	989,9	1299,7	1666,9	1231,8	1474,4
Real GDP growth (%)	7,2	6,4	8,2	8,5	5,2	-7,9	4
Inflation, consumer prices (annual,%)	10,9	12,7	9,7	9	14,1	11,7	6,86
Unemployment rate (%)	7,8	7,2	7,2	6,1	6,3	8,4	7,5

Source: IMF and Rosstat

2.2.2. Banking system

The Russian Federation's banking system is represented by the Central Bank of Russian Federation (CBRF) and commercial banks together forming a two-tier banking system. The number of second tier banks was 1 058 at the beginning of 2010 (Table 9). All commercial banks can be divided into three groups (Doronkin et al, 2011). The first is formed by state banks; the second consists of banks controlled by foreign capital. According to the Russian legislation foreign banks are prohibited from opening branches in the territory of Russia therefore foreign banks use the option of opening affiliated banks or purchasing local banks. The third group is represented by commercial banks controlled by the residents of the Russian Federation. As of 1st May 2010 second tier banks were represented by 15 state banks, 106 banks operated with the participation of foreign capital and the remaining 937 banks belonged to the third group. (Doronkin et al, 2011). The top 5 banks were represented mainly by state banks as of 2010 their assets constituted 50% of the banking sector's total assets. (Doronkin et al,2011).

International Financial Reporting Standards (IFRS) were implemented in Russia in 2004 (CBRF). Some requirements of Basel II with regard to operational risks were included in the

banking regulation in 2010. The question of implementation of the remaining conditions of Basel II as well as the new Basel III is still open (Interfax, 2010).According to Doronkin et al (2011), development of Russia's banking sector from 2006 to 2010 can be divided into three periods:

The first period: 2005-early 2008 was a time of vigorous development of the sector; the second period from the second half of 2008 until the first half of 2009 can be characterized as the period of crisis, when the sector experienced problems with liquidity, deterioration in the quality of assets and the shrinkage of lending in the economy while the third period from the second half of 2009 until 2010 was a period of economic stabilization and a gradual increase of lending in the economy.

Table 9. Indicators of the banking sector, Russia.

	2006	2007	2008	2009	2010
Commercial banks (number)	1189	1136	1108	1058	1021
Major indicators of the banking sector, US$ million					
Assets	530 326	819 759	953 788	973 214	1 109 074
Capital	64 287	108 818	129 717	152 797	155 259
Loans	304 994	500 492	562 522	532 920	595 397
Provisions for loans in % of total loans	4,1	3,6	4,5	9,1	8,5
Deposits	326 623	497 446	499 714	563 564	687 168
Profitability ratios, %					
ROAA	3,3	3	1,8	0,7	1,9
RoAE	26,3	22,7	13,3	4,9	12,5
Banking sector and the economy, %					
Assets/GDP	53,57	63,07	57,22	79,01	75,22
Loans/GDP	30,81	38,51	33,75	43,26	40,38
Deposits/GDP	33	38,27	29,98	45,75	46,61

Source: Central Bank of RF

From the beginning of 2006 the banking sector played an important role in the economy of the country. Bank assets almost doubled from 2006 to 2010, which was an increase from 54% of GDP to 75% of GDP in 2010 (Table 9). Lending increased from 31% of GDP in 2006 to 47% of GDP in 2010 (Doronkin et al, 2011). As mentioned due to the limited capacity of Russian banks and access to the lower interest rates of international financial institutions, banks were more

interested in borrowing funds abroad.(Bogetic et al,2010) As a result the banks' external debt doubled from 5% of GDP in 2004 to 10% of GDP in 2010 (Table 10).

Table 10. Bank external debt, Russia. **Mln USD**

	2004	2005	2006	2007	2008	2009	2010
Bank external debt	32 341	50 144	101 161	163 656	166 280	127 212	144 225
% of GDP	5	7	10	13	10	10	10

Source: Central Bank of Russia

According to Bogetic et al (2010), the loan-deposit ratio of the whole banking sector rose from 126% in 2005 to 149% in 2008 which was a consequence of the increased borrowing from abroad. Moreover, some features of the bank credit portfolio exposed the banks to credit and liquidity risks. One of them was that in some cases assets and liabilities, in fact, did not match each other, which mean that medium term projects could be financed through short term foreign loans with rollover agreements therefore leading the corporate borrowers to make repayments from the working capital. Another feature of the lending practice of the Russian banks was weak loan portfolio diversification, namely the real estate and construction sectors constituted the largest part of the loan portfolio. In addition to that banks relied on real estate as the main collateral and therefore exposed themselves to the unpredictable changes in the real estate prices (Bogetic et al, 2010). All these features together with the worsening macroeconomic situation in the country made the country more responsive to the global financial crisis impact.

2.2.3. Financial crisis impact

A significant fall in oil prices in the second half of 2008 together with the capital outflows and limited access to the external funds led the country to liquidity problems (Bogetic et al, 2010). As a result the country experienced a decline in economic growth, with real GDP growth decreasing from 5.2% in 2008 to -7.9% in 2009 (Table 8), unemployment increased from 6.3% in 2008 to 8.4% in 2009. This situation was harmful for the banking sector due to the worsening

repayment capacity of the bank borrowers which in its turn led to the deterioration of the loan portfolio quality.

As Dorbec (2010) notes non-performing loans increased from 2.1% of the total loans in 2008 to 5.1% of total loans in 2009. According to the Central Bank of Russia's definition non-performing loans are loans which are overdue for more than one day. If a loan consists of several tranches then only the overdue tranche is used in calculation of the non-performing loan. Overall we can observe that non-performing loans almost doubled within one year. Provisioning levels followed the same dynamic, namely it also doubled from 4.5% of the total loans in 2008 to 9.1% in 2009 (Table 9). By early 2009 twenty banks were under procedures of bankruptcy prevention and four bank mergers were fulfilled (Doronkin et al, 2011).

The Russian government, faced with the worsening situation in the country's economy, conducted supportive measures for the amount equal to 4 % of GDP (Dorbec, 2010). The largest part was directed to the banks as most had suffered from the crisis in the economy. The source of the Russian authorities' support was the National Welfare Fund where $220 bn or 13 % of GDP were accumulated. Thanks to the saving funds, Russia was one of the CIS countries which did not apply for the external assistance (Dorbec, 2010).

Moreover during the period January till September 2008 the Central Bank of RF raised the rates of allocation to the fund of compulsory reserves four times. The rate of compulsory reserves under credit organizations obligations before banks- non-residents within this period increased from 3.5% to 8.5%. Thus, the Central Bank of RF created a liquidity cushion in the banks which was used during the peak of the crisis (Doronkin et al, 2011). Among other anti-crisis measures in the banking sector Doronkin named credits from the Central Bank of RF to commercial banks without collateral, support to the large banks, increase of the guaranteed amount of deposits, recapitalization of banks through subordinated loans.

2.2.4. Loan loss provisioning

Specific provisions in Russia are considered as bank's expenses and aim to cover bank losses due to the non-performing loans.(Belyakov, 2002) According to the Russian legislation all loans are divided into two groups for creation of loan loss provisions. They are individual loans and homogenous group of loans. The first group consists of the loans which differ from other bank loans, while loans included in the homogenous group of the loans possess similar characteristics of the credit risk and the amount of each loan should not exceed 0.5% of the bank's capital. For the purpose of the specific provisions creation all individual loans should be grouped into five categories of quality. They are standard, non-standard, doubtful, problem and hopeless loans. Determination of the quality group should be made by the professional judgment of the banks based on assessment of the financial conditions of the borrower and quality of obligations fulfillment under loan agreement by the borrower as Table 11.

Table 11. Table for determination of loan's quality category

Debt repayment / Financial status	Good	Medium	Bad
Good	Standard (1 category)	Non-standard (2nd category)	Doubtful (3rd category)
Medium	Non-standard (2nd category)	Doubtful (3rd category)	Problem(4th category)
Bad	Doubtful (3rd category)	Problem(4th category)	Hopeless (5th category)

Source: Rules of Central Bank RF, 26 March 2004

The loan loss provisions should be created on the basis of the respective loan classification as per Table 12 below.

Table 12 The size of loan loss provisions for individual loans

Loan category	The amount of reserves (in % of principal amount)
1st category of quality (standard loan)	0%
2nd category of quality (non-standard loan)	1%-20%
3rd category of quality (doubtful loan)	21%-50%
4th category of quality (problem loan)	51%-100%
5th category of quality (hopeless loan)	100%

Source: Rules of Central Bank RF, 26 March 2004

Homogenous group of credits is classified on the basis of the overdue period (Table 13). Banks can choose any from two options for the loan loss provisions creation, except for the loans to SME sector which should refer to only option 1.

Table 13.The size of loan loss provisions for homogenous group of loans.

Homogenous group of loans	Loans extended to individuals (option 1), small and medium enterprises (SME)		Loans extended to individuals (option 2)	
	Portfolio of secured loans (mortgage, auotocredits)	Portfolio of other loans	Portfolio of secured loans (mortgage, autocredits)	Portfolio of other loans
without overdue repayments	0,50%	1%		
with overdue repayments (from 1 to 30 calendar days)	1,50%	3%	0,75%	1,50%
with overdue repayments (from 31 to 90 calendar days)	10%	20%	10%	20%
with overdue repayments (from 91 to 180 calendar days)	35%	50%	35%	50%
with overdue repayments (over 180 calendar days)	75%			

Source: Rules of Central Bank RF, 26 March 2004

Provisions created under the loans which constitute the first risk category of the loan classification or in other words under the riskless loans (without overdue payments) should be counted as a part of additional bank capital (Tier 2 capital). For the purpose of regulatory capital calculation general provisions can be included in the additional capital for an amount not exceeding 1.25% of the risk weighted assets (CBRF, 2003).

2.3. Ukraine.

2.3.1. Economy

Metallurgy is a leading sector in the Ukrainian industry forming 20% of the country's GDP. Increase of ferrous metal prices in 2007 and 2008 provided 32% of export proceeds however due

to the decline of prices in 2009 this figure later decreased to 25.4% (InfoMine, 2010). According to Association of Ukrainian Banks (AUB,2010) the period from 2001 to 2004 can be characterized as a period of revival of the country's economy and the highest GDP growth 12 % was recorded in 2004 (Table 14). The driving source of the economic growth in 2004 was industrial production and the agricultural sector. The deposit base of the commercial banks started to grow and led to an increased number of credits to the real sector of the country. As a result, GDP increased while inflation fell to 9% in 2004. (AUB, 2010)

The period 2005-2008 was a new level of economic development (AUB, 2010). Namely 2005 was marked by a sharp decline in GDP from 12% in 2004 to 2.7% in 2005 (Table 14). The reasons for this were decrease of ferrous metals prices and a worsening political situation in the country (IMF,2005). Overall the period 2005 to 2008 can be characterized as a period of gradual increase in external debt especially banking debts from 7% of GDP in 2005 to 22% in 2008 (Table 16) . The problem of increasing external debt was that the most of the received funds were directed to the consuming sector instead of the real sector. As a consequence inflation grew from 13.6% in 2005 to 25.2% in 2008. (Table 14)

Table 14. Macroeconomic data, Ukraine

Indexes	2004	2005	2006	2007	2008	2009	2010
GDP (USD bln)	64,8	86,1	107,7	142,7	180,3	113,5	137
Real GDP growth (%)	12,1	2,7	7,3	7,9	2,1	-15,1	4,2
Inflation, consumer prices (annual,%)	9	13,6	9,1	12,8	25,2	15,9	9,4
Unemployment rate (%)	8,6	7,2	6,8	6,4	6,4	8,8	8,4

Source:IMF and Ukrstat

2.3.2. Banking system

Ukraine's banking sector consists of the National Bank which is a first-tier bank and commercial banks representing the second-tier of the system. As of 2010 the banking sector included 194 second-tier banks (Table 15), including eighteen banks under liquidation, fifty five banks with participation of the foreign capital and five state banks. (National Bank of Ukraine, 2011) During the period 2004 until 2008 Ukrainian banks increased their loans by 612%, which was

the second highest among CIS, Middle and East European banks (Kirchner et al, 2011). The negative side of such credit growth was that most loans were extended for consumer and mortgage lending which meant that the real sector received fewer funds for its development. Good economic conditions in the country in 2004 with low inflation and GDP growth, increased trust in the banking sector leading to a rise in banks deposit base.

Between 2005 and 2008 the level of foreign capital in the banking sector reached almost 40%. Besides within this period banks started to borrow heavily from abroad (AUB, 2010) increasing the vulnerability of the banking sector due to the currency and maturity mismatches (Kirchner et al, 2011). Namely, loan to deposit ratio in the foreign currencies stood at 130% in 2006, 250% in 2008, 290% in 2009 and 200% in 2010. Foreign exchange long term loans to time deposit (with maturity more than 2 years) ratio was at 624% in 2006 and peaked at 1,100% in 2009 due to the faster pace of deposit withdrawals rather than long-term credits repayments (Kirchner et al, 2011). The rest of the important figures and their dynamics during the period from 2006 to 2010 can be seen in Table 15.

Table 15. Data on the banking sector, Ukraine

	2006	2007	2008	2009	2010
Commercial banks (number)	193	198	198	197	194
Major indicators of the banking sector, US$ million					
Assets	67 362	118 692	120 271	110 314	118 353
Capital	8 429	13 778	15 489	14 433	17 302
Loans	53 326	96 112	102 889	93 653	94 853
Provisions for loans	2 425	3 659	5 779	12 436	14 192
% of total loans	5	4	6	13	15
Deposits	58 933	104 914	104 782	95 881	101 051
Net profit	821	1311	949	-4 818	-1 637
Profitability ratios, %					
NIM	5,3	5,03	5,3	6,21	5,79
ROAA	1,61	1,5	1,03	loss	loss
RoAE	13,52	12,67	8,51	loss	loss
Banking sector and the economy, %					
Assets/GDP	63	83	67	97	86
Loans/GDP	50	67	57	83	69
Deposits/GDP	55	74	58	84	74

Source: National Bank of Ukraine

Table 16. Bank external debt, Ukraine **(Mln USD)**

	2004	2005	2006	2007	2008	2009	2010
Bank external debt (mln USD)	2 662	6 112	14 089	30 949	39 471	30 861	28 119
% of GDP	4	7	13	22	22	27	21

Source: National bank of Ukraine

2.3.3. Financial crisis impact

Ukraine was suffered the most from the economic crisis. GDP in 2009 decreased by 15.1%, which was the highest fall among CIS and European countries. (Kirchner et al, 2011). The factors influencing the depth of the global crisis impact were almost the same as in Russia and Kazakhstan: decrease of the world commodity and metals prices, the fall of external lending, however the situation in Ukraine deteriorated additionally due to political instability which in its turn caused delayed implementation of anti-crisis measures.

From the fourth quarter of 2008 due to the global crisis impact, the asset quality of Ukrainian banks started to deteriorate. The sharp increase of the problem loans was caused by the worsening of individuals' and legal entities' financial conditions, weak underwriting policy during credit boom, weak loan portfolio diversification and significant crediting in foreign currencies (Malyukova et al, 2011). There is no consensus in the level of non-performing loans since National Bank of Ukraine, rating agencies and the IMF used different ways of determining non-performing loans. According to the IMF, non-performing loans increased significantly from 13.2% in 2007 to 41.6% in the first part of 2010 (Kirchner et al, 2011). According to Standard & Poors rating agency definition non-performing loans also include restructuring loans and therefore reached 50% in 2010 (Malyukova et al, 2011). The growth of non-performing loans had slowed down by the end of 2010 and at the beginning of 2011, banks increased their capital and loans loss reserves from 6% in 2008 to 15% in 2010, which are good signs for banking sector (Malyukova et al, 2011).

September 2008 was known as the time of massive deposit withdrawals in foreign and local currencies (Kirchner et al, 2011). Decrease of the deposit base and limited access to external

funds caused shrinkage in the volume of credit. This gap which appeared on the liabilities side of banks' balance sheets was covered by governmental and external support such as loans from the IMF. In particular the IMF extended a loan of $16.5 bn to the Ukrainian government in the second half of 2008. The aim of the IMF's loan was to support macroeconomic and financial stability in the country. However in 2009 this programme was suspended and new Stand-By agreement was signed for amount of $14.9 bn in the second half of 2010. (Kirchner et al, 2011)

In order to encourage the population to save money in banks the government tripled the guaranteed amount of deposits from UAH 50,000 to UAH 150,000 in the end of 2008. Besides for the same purposed National Bank of Ukraine (NBU) froze time deposits for 6 months starting from October 2008. (Kirchner et al, 2011)

2.3.4. Loan loss provisioning

Loan loss provisioning in the Ukraine does not differ significantly by the way of provisioning creation from the Russian model. The only difference is that the Ukraine creates provisions on all standard loans which are determined as riskless ones. According to Ukrainian legislation there are two types of loan loss provisions: general and specific provisions. General provisions should be created for standard loans, while specific provisions cover risks under non-standard loans, which consist of the loans under control, sub-standard loans, doubtful and hopeless loans. The type of the loan is determined by the commercial banks on the basis of financial status of the borrower and his diligence in loan repayment. Depending on such characteristics of the borrower banks define the loan category as in Table 17 and accrue respective reserves as Table 18.

Table 17. Classification of loans.

Diligence in loan repayment/loan category as per financial status of the borrower	Good	Medium	Weak
A	standard	under control	sub-standard
B	under control	sub-standard	doubtful
C	sub-standard	doubtful	hopeless
D	doubtful	hopeless	hopeless
E	hopeless	hopeless	hopeless

The source: National Bank of Ukraine, 1998.

According to the financial status of the borrower loans can be divided into 5 categories: A-very good, B- good, C-satisfactory level with signs of deterioration, D- bad, E – very bad with no signs that obligations of the borrower will be fulfilled. Depending on the borrower's loan repayment they are good performers if there are no overdue payments, weak performance with overdue amounts less than 90 days and bad performance with overdue repayments more than 90 days.

Table 18 The level of provisions.

Type of the loan	The level of reserves
Standard	2%
under control	5%
sub-standard	20%
Doubtful	50%
Hopeless	100%

The source: National Bank of Ukraine, 1998.

According to Ukrainian bank legislation, general reserves should be included in the calculation of the regulatory bank capital.

CHAPTER 3: The model and the data

3.1. The model:

Following Bikker and Metzemakers's paper (2005), we test three hypotheses: pro-cyclicality, capital management and income-smoothing hypotheses. For these purposes we employ regression analysis tools. The multiple regression equation being tested in STATA 11 programme follows to a greater extent the models used by Bikker & Metzemakers (2005), Laeven & Majnoni (2003) in their research and is as follows:

$$LLP_{it} = \delta LLP_{i,t-1} + \beta_1 CAP_{it} + \beta_2 LOANS_{it} + \beta_3 EBTP_{it} + \beta_4 GDP_{it} + \beta_5 UNEMPLOYMENT_{it} + \beta_6 DEBT_{it} + \beta_7 DUMMY\_VAR_{it} + \nu_i + \epsilon_{it,}$$

Where loan loss provisions (LLP) are a dependent variable and measured as the ratio of the loan loss provisions to the total assets. The loan loss provisions represent the sum of specific and general loan loss provisions. ($LLP_{i,t-1)}$ is one-period lag of LLP. Independent variables are

represented by the three bank-related variables: the ratio of loans to total assets (LOANS), the capital ratio (CAP), the ratio of earnings before taxes and provisions to total assets (EBTP) and four variables reflecting the macroeconomic situation in the CIS countries including unemployment rate (UNEMPLOYMENT) and real GDP growth rate (GDP). As against the model of Bikker and Metzemakers (2005) and Laeven & Majnoni (2003) we extend the regression model with the additional independent variable, natural logarithm of external banking debt (DEBT). (DUMMY_VAR) refers to the dummy variable reflecting the change of LLP during non-crisis and crisis periods.

i= 1-64 (banks), t=2004-2010, δ – coefficient for lagged dependent variable ($LLP_{i,t-1}$), β-coefficient measuring the change of dependent variable after unit change of independent variables, ν – bank's heterogeneity and ε – the error term, which represents other factors influencing the dependent variable. We use log-log regression model where unit is defined as 1 %.

The regression model tests H_0 hypothesis: that there is no correlation between dependent and independent variables and H_A: that there is a correlation between dependent and independent variables. If p-value for each independent variable is less or equal to significance level which in our case equals to 0.05, H_0 hypothesis is rejected and alternative hypothesis is accepted. Signs (+) or (-) of β will support or reject our research hypotheses in the following manner:

Table 19. Testing hypotheses

Testing hypotheses	Yes, if		No, if	
Pro-cyclical provisioning behavior	β2<0 β5>0 β7<0	β4<0 β6<0	B2>0 β5<0 B7>0	β4>0 β6>0
Capital management hypothesis	β 1<0		β 1>0	
Income-smoothing hypothesis	β3>0		β3<0	

(Summary of empirical results from the existing research such as Laeven & Majnoni, 2003; Bikker&Metzemakers, 2005; Bouvatier&Lepetit, 2008)

The pro-cyclicality hypothesis

Pro-cyclicality hypothesis implies that relationships between loan loss provisions and business cycles are negative or, in other words, loan loss provisions grow during economic downturns and decline during periods of economic growth (Hsieh et al, 2008). Regression models of empirical research vary from one survey to another. Based on the models used in Bikker & Metzemakers (2005),Hsieh et al (2008); Laeven & Majnoni's (2003) papers we choose three independent variables for our model which, to our mind, precisely reflects the countries business cycle: they include real GDP growth, the unemployment rate and loans as a portion of assets. GDP growth and unemployment rates describe the macroeconomic situation in the country. Namely if the country experiences bad times, the GDP falls and unemployment grows. Therefore we expect a negative correlation of loan loss provisions with GDP growth and a positive correlation with unemployment meaning that banks tend to create less loan loss provisions during boom times and increase provisions during economic downturns (Bikker & Metzemakers, 2005). LOANS as an independent variable related to the banks characteristics are sensitive to macroeconomic situation in the country. As a rule, if banks do not implement counter-cyclical procedures in their activity, loan volumes grow during upturns due to favorable conditions for repayments by the borrowers and decreases during downturns, which lead to a further worsening of the countries economic situation (Gonzales, 2009). Therefore relationships between loan loss provisions and loans to assets ratio in our model are expected to be negative in order to confirm the pro-cyclicality hypothesis.

The dummy variable aims to show how provisioning behavior changes during crisis. In this regard taking into account that the crisis was not met by the CIS countries simultaneously we cannot implement the time dummy variable and therefore we consider negative GDP as the sign of crisis. Hence GDP growth is marked as 1 if it is negative otherwise it is 0.

Apart from the above mentioned variables we have included one additional independent variable for testing the pro-cyclicality hypothesis which we believe explains the peculiarity of CIS banks. It is DEBT which refers to external bank debt. Since external bank debt grew significantly in CIS

countries during their economic upturns (Chapter 2), this independent variable can be associated with the regions' business cycle. Therefore for confirmation of the pro-cyclicality hypothesis we expect a negative correlation between DEBT and loan loss provisions.

Income smoothing hypothesis

EBTP is an independent variable which has been included in the model for testing the income smoothing hypothesis. Loan loss provisions are created by the means of bank's expenses therefore any increase of loan loss provisions influences the bank's earnings (UPLIFT, 2001). Because of the interrelation of loan loss provisions with earnings and a judgmental element existing in the process of creating loan loss provisions, income smoothing is used by bank managers in order to manage the volatility of banks' profit (Yunxia,2007). Therefore we expect a positive correlation between earnings before taxes and provisions (EBTP) and loan loss provisions.

Capital management hypothesis

Bikker & Metzemakers (2005) in their research use capital ratio to test the capital management hypothesis. They conclude that banks with low capital ratios tend to create more provisions. Following their survey we also use the same independent variable CAP in our model. Hence we expect negative correlation between CAP and LLP as confirmation of capital management.

Lagged dependent variable

Following the example of Bouvatier & Lepetit (2008) we have included in our models lagged dependent variables in order to take into account of the 'dynamic adjustment of LLP_{it}' (Bouvatier & Lepetit, 2008, p.518) . This variable is aimed to reflect the speed of LLP changes over time as reaction on the deterioration of loan portfolio's quality. (Floro,2010). If LLP correlates with the lagged dependent variable then the speed of LLP adjustment is slow, therefore no correlation is expected between the variables in cases where the LLP has been reached in the same period as potential losses are recognized.

Since we have included lagged dependent variables in our model the usage of ordinary least square method could lead to biased results therefore we apply the Generalized Method of Moments (GMM) which is used for dynamic panel data regression. For estimation of regression we follow the example of Laeven & Majnoni (2003) and use 'Arellano and Bond GMM difference estimator for panel data with lagged dependent variables' (Laeven & Majnoni, 2003,p.193). According to Mileva (2007) Arellano and Bond GMM estimator is able to solve several problems which may arise in dynamic panel data regression. The first problem is the correlation of regressors with error terms because of the presence of endogenous explanatory variables in the regression equation. Second, the problem of autocorrelation due to the inclusion of lagged dependent variables. The third problem relates to the panel data base with short time dimension (t=7) in comparison with the larger bank dimension (i=64).

3.2. The data

For analysis we use data from sixty four Kazakh, Russian and Ukrainian banks. The biggest sample of forty one banks belongs to Russia the smallest one includes eight Kazakh banks and the rest twenty five banks from the Ukrainian sample. All banks which were included in the dataset are commercial banks constituting the second tier of the CIS banking system. The Russian dataset includes several state banks, however it is worth noting that state banks which are not under government control also belong to second tier banks. (Doronkin et al, 2011). Overall my dataset is homogenous since it only represents commercial banks (Bikker and Metzemakers, 2005) We use a 7 year period from 2004 to 2010 which includes both the period of economic growth and slowdown caused by the global crisis and should be helpful in testing pro-cyclicality effects of provisions on the countries' economies. The source used for collecting bank data is Bankscope database; macroeconomic figures are obtained from IMF websites and statistical agencies from each country.

In order to create a more balanced dataset for regression analysis we excluded banks with insufficient data and initial list of banks decreased from 181 to 64 banks. However in some cases

Bankscope dataset program has not provided information for 2010 figures therefore we use IFRS based annual financial reporting for 2010 from banks' websites where it was possible to obtain it.

Table 20. Descriptive statistics of key regression variables

Variables	Mean	Std.Dev.	Min	Max
LLP/TA	0.026	0.053	(-0.082)	0.498
CAP/TA	0.118	0.102	(-1.254)	0.359
LOANS/TA	0.639	0.362	0.062	7.601
EBTP/TA	0.036	0.067	(-0.432)	0.782
GDP growth	0.044	0.059	(-0.151)	0.121
UNEMPL rate	0.072	0.008	0.058	0.088
LnDebt	(-0.691)	1.126	(-3.765)	0.508

Source: Stata 11.

From Table 20 with descriptive statistics of key regression variables we can summarize that GDP growth during the period of consideration among CIS countries was 4.4% on average and unemployment rates averaged equaled 7.2 %. However the minimum level of GDP growth was negative and equal to -15.1 % and the maximum unemployment rate was 8.8%. Loan loss provisions to total assets grew from -0.082 to 0.498 while on average it was 0.026. The minimum of capital ratio was equivalent to – 1.254 which was the consequence of bankruptcy of several banks (Chapter 2) and the maximum level reached 0.359 and on average capital ratios equaled 0.118. The highest difference between minimum and maximum levels was reached by loans to total assets ratio, which increased from 0.062 to 7.601. Earnings before taxes and provisions to total assets averaged 0.036 but the minimum index was negative at -0.432 and the maximum level reached 0.782. The only variable, natural logarithm of external bank debt, had negative signs for the average parameter -0.691, the highest level equaled 0.508 and the lowest level equaled -3.765 implying that during period of consideration banks tended to repay their external debts (Chapter 2). One of reasons for the significant decrease of loans to total assets ratio to my mind was repayment of external debts by the banks in the deteriorating quality of loan portfolio's.

CHAPTER 4: Empirical results

Table 21. Regression results

Regression variables	Coefficient	p-value
LLP, lagged	(-0.296)	0.004
CAP	(-0.298)	0.016
LOANS	0.037	0.000
EBTP	(-0.101)	0.318
GDP	(-0.483)	0.000
UNEMPLOYMENT	0.975	0.008
DUM_VAR	(-0.043)	0.008
DEBT	0.013	0.004

Source: Stata 11

Table 21 contains results of dynamic panel data regression. Coefficients for lagged LLP, CAP, LOANS, GDP, UNEMPLOYMENT, DEBT and DUM_VAR variables are significant taking into account that their p value is less than chosen significance level of 0.05. Therefore we can reject the null hypothesis and state that there is a correlation between dependent and the above mentioned independent variables. Coefficients for independent variables, EBTP, and for constant are insignificant. Country variables are omitted by the regression model due to their multicollinearity which might be caused, to my mind, by the similarity of Kazakh, Russian and Ukrainian economies since all of them were part of the USSR in the past.

According to the regression results confirmation of the pro-cyclicality hypothesis is found. Namely the predicted correlation between GDP growth and LLP is negative. This result is consistent with Bikker & Metzemakers (2005), Bouvatier & Lepetit (2008) and Laeven & Majnoni's (2003) findings. GDP variable coefficients are significant and equal – 0.48. (Table 21). Therefore we conclude that CIS banks increase the level of loan loss provisions when GDP growth goes down and vice versa.

UNEMPLOYMENT also reflects the business cycle and is positively correlated with loan loss provisions therefore confirming the pro-cyclicality hypothesis. The coefficient of UNEMPLOYMENT variable is significant at 0.98 (Table 21). Thus increased unemployment

leads to increased loan loss provisions. Our result does not correspond to Bikker & Metzemakers' (2005) research which did not find statistically significant relationships between unemployment rate and loan loss provisions.

Thus we observe that GDP and unemployment relate to loan loss provisions and find that the relationship has a pro-cyclical effect on the economies of the three countries. It is worth noting that in absolute values the coefficient for UNEMPLOYMENT (0.98) is larger than the coefficient for GDP (0.48) implying that the unemployment rate's change results in larger adjustments of bank provisions than in the case of GDP growth changes. This can be explained by the peculiarity of CIS banks provisioning system. Namely, according to the rules of loans' classification of each country the quality of collateral under extended credit plays an important role determining the size of loan loss provisioning. This means that the more liquid collateral the less provisions are required since banks in case of problem loans can return the loan amount through the collateral selling. For example, in Russia the size of loan loss provisions for overdue consumer loans without any collateral should be double that of mortgage and auto credits (Table 13). Relationships between loan loss provisions and the unemployment rate relate to a greater extent to consumer lending. Therefore when the unemployment rate rises more people lose their jobs and are unable to repay their loans. This leads banks to increase their loan loss provisions significantly under uncollateralized loans. Moreover deteriorating economic situations leads to unemployment and an increase of problem loans in banks which in its turn limits the populations' access to consumer credit. All of these factors decrease demand for purchase of houses which finally leads to falling prices in housing markets. (Doronkin et al, 2011) Consequently mortgage loans also become the subject of provisions' increase because of the decreased value of collateral. The same scenario with consumer loans took place in Kazakhstan (FSA,2009) and Ukraine(Kirchner et al, 2011). Moreover in Ukraine consumer loans growth was the highest among other CIS countries with 'average yearly increase of 104%' during the period

from 2004 to 2008 (Kirchner et al, 2011, p.11). Thus it could be the reason for the larger impact of unemployment rates on the growth of loan loss provisions than GDP.

Dummy variables aim to reflect adjustment of provisions during crisis and non-crisis periods. Its coefficient is significant, equals -0,043 (Table 21). Negative signs of the variables coefficient means that during bad time banks create loan loss provisions more than during good times. This result supports the hypothesis of the pro-cyclical provisioning behaviour of CIS banks.

The coefficient for LOANS is statistically significant and equals to 0.037 (Table 21). Positive correlation between loans to total assets and loan loss provisions to total asset ratios implies that increase (decrease) of LOANS leads to the increase (decrease) of loan loss provisions. A positive sign for this independent variable rejects the pro-cyclicality hypothesis and hence is consistent with findings of Bikker & Metzemakers (2005), Floro (2010). However, following Bikker & Metzemakers' (2005) research, we can conclude that taking into account higher coefficients for GDP and UNEMPLOYMENT variables than for LOANS variable, overall CIS banks provisioning behavior has a pro-cyclical effect on the country's economies. Therefore the relationships between LOANS and LLP only diminish pro-cyclical effect of bank provisioning behavior in CIS countries.

The reason for such results may be another peculiarity of CIS banks provisioning systems. According to the rules for the creation of loan loss provisions banks are required to form loan loss provisions under a standard category of loans which includes loans without any overdue repayments. This type of provision constitutes general loan loss provisions (Chapter 2). For example, in Russia banks have to create loan loss provisions for homogenous group of loans which belongs to the category 'without overdue repayment' at the rate of between 0.50% and 1.50% of the principal amount (Table 13) and in Ukraine banks must create loan loss provisions for loans from the standard category at 2% of the principal loan amount (Table 18). In

Kazakhstan banks can create loan loss provisions for the standard category of loans at their own discretion.

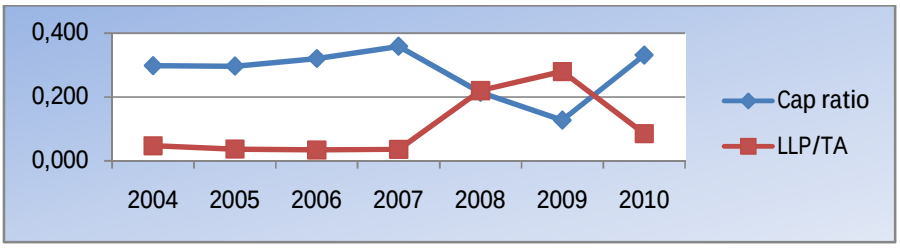
This result does not directly support Hsieh et al's (2008) research that income smoothing is more likely can be found in countries where regulation fixes the minimum level of loan loss provisions for standard loans. However in the sense that such regulation requirements makes loan loss provisioning behavior less pro-cyclical, our results correspond to some extent to their conclusions. A World Bank survey (2003) also states that such loan loss provisioning practice is counter-cyclical since it relates to the forward looking approach.

The DEBT variable relates to the banks external debt. The coefficient for DEBT is significant, and equals 0.013 (Table 21) and has positive signs. This means that an increase of the banks external debt increases loan loss provisions. The received outcome rejects the pro-cyclical hypothesis and to the contrary documents signs of counter-cyclicality. However as in the case of LOANS it does not significantly influence the overall pro-cyclical effect of bank provisioning in CIS which has been confirmed by GDP and UNEMPLOYMENT variables and therefore to some extent only mitigates the pro-cyclicality of provisioning. This variable relates to LOANS since bank external debt aims to increase the funding base of banks therefore leading to the loans growth. As discussed above most banks must create loan loss provisions for the loans which do not have signs of non-repayment hence we see the same tendency of a positive correlation between LLP and DEBT as it is between LLP and LOANS. We also assume that this counter-cyclical effect of external bank debt on loan loss provisions may exist because any external debt implies relationships with investors. Banks which are willing to borrow funds from abroad have to convince foreign investors that invested money will be repaid in time. Therefore creation of general loan loss provisions as a cushion for unpredictable loan losses could be a sign of good credit risk management for investors.

The regression outcome shows insignificant result for EBTP therefore there is no correlation between loan loss provisions and earnings before taxes and provisions. Hence we do not find evidence of the income smoothing hypothesis. This means that taking into account negative sign of the variable's coefficient when earnings before taxes and provisions go down loan loss provisions go up but in this case LLP change does not significantly depend on the change of EBTP. Therefore we can conclude that CIS banks are less concerned about profits volatility or in other words they do not have serious incentives to use earning management since a substantial proportion of banks do not have sufficient opportunities to use global capital markets where profit stability is an important sign of the bank' s stability. The evidence of limited access of CIS banks to global capital markets could be the modest number of IPOs made by CIS banks. For example as of 2007 in the list of banks which accomplished IPO there were no Ukrainian banks, only three Kazakh banks (Dzhalilova, 2007) and two Russian banks (Buzdalin, 2007).

Coefficient for the explanatory variable CAP is significant at -0.298 (Table 21). Hence we have evidence of a negative correlation between capital ratio and loan loss provisions which confirms the capital management hypothesis. This negative relationship implies that banks increase their general loan loss provisions if they are part of tier 2 capital, when Tier 1 capital ratio is low Bikker & Metzemakers (2005). This result is in consistent with Bikker & Metzemakers (2005) results. However they assume that the same negative correlation between CAP and LLP could be the result of an increased amount of bad loans and low capital ratio. In Graph 1 we can see that overall capital ratio and loan loss provisions move in opposite directions corresponding to our regression results that imply that banks increase (decrease) their loan loss provisions when capital ratio declines (goes up).

Graph 2. Capital ratio and LLP/TA (CIS banks)



Floro's (2010) research is based on a survey of Philippine banks which by the peculiarity of loan loss provisioning regulation are quite similar to Russian and Ukrainian banks. Namely, in all those countries banks are obliged by the regulation to create loan loss provisions for unclassified category of loans which form general provisions and should be counted as part of Tier 2 capital. Therefore our results between LOANS and LLP correspond to results gained by Floro (2010) for Philippine banks. Floro (2010) also documents a negative correlation between CAP and LLP which is consistent with our results that despite the fact that general provisions are created during upturns they therefore can be used as buffer during bad times. However our sample also includes Kazakh banks which are not obliged to create general loan loss provisions for standard loans but they can do so at their own discretion. General loan loss provisions are also part of Tier 2 capital in Kazakhstan.

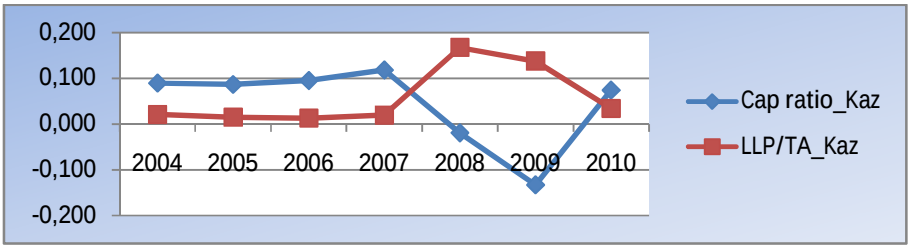
In the case of Russian and Ukrainian banks the creation of general provisions is a less discretional process than in the case of Kazakhstan. This means that such regulation leaves fewer opportunities for Russian and Ukrainian banks to manipulate with capital ratio through general loan loss provisions. However in Russia for non-homogenous loans the rules do not prescribe the creation of loan loss provisions for the standard category of loans and in Kazakhstan banks can create general loan loss provisions at their own discretion. Therefore taking into account that general provisions form part of regulatory capital we assume that CIS banks may have incentives to use general provisions for improvement of capital ratio deteriorated due to the increase of bad loans. Since for calculation of regulatory capital the size of general loan loss provisions within

Tier 2 capital is limited by the capital regulation up to 1.25% of the risk weighted assets (Chapter 2), the increase of general provisions for capital management cannot be an everlasting process for the purposes of capital ratio improvement (Zhou Yunxia, 2007). Therefore general loan loss provisions are not the only source for capital management among CIS banks.

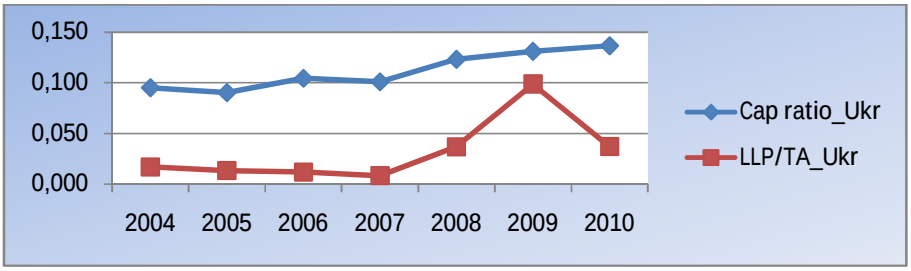
The negative correlation between CAP and LLP as mentioned above could be also caused by the worsening quality of bank's loan portfolio which leads the banks to create more specific loan loss provisions and results in decreased capital ratio. Therefore capital ratio and loan loss provisions go in opposite directions. We can see such dynamics on all three graphs for each country graph (Graph 3, Graph 4, Graph 5). However there could be another explanation for the negative relationship between CAP and LLP. When banks reach the critical level of capital ratio they start to manipulate specific loan loss provisions in order to decrease them and improve the level of capital ratio. Since banks can estimate the level of riskiness of the borrower at their discretion capital management can take place. However the governments of Kazakhstan (Saenko, 2010) and Russia (Doronkin et al, 2011) being concerned by the deteriorating capital adequacy of banks and significant decreases of lending levels made capital injections in some system forming banks. Ukrainian banks with foreign capital participation were supported by their parent banks [1] (Kirchner et al, 2011). At the same time banks are also concerned with the increased quantity of bad loans apply for restructuring of bad loans which in turn influenced, to some extent, the decrease of specific loan loss provisions (Gribanova,2009). Therefore capital ratio improves simultaneously with the decrease of loan loss provisions and we observe negative correlations between CAP and LLP.

[1] As of 2011 40.4 % of total banks capital in Ukraine belongs to foreign investors (Kirchner et al, 2011).

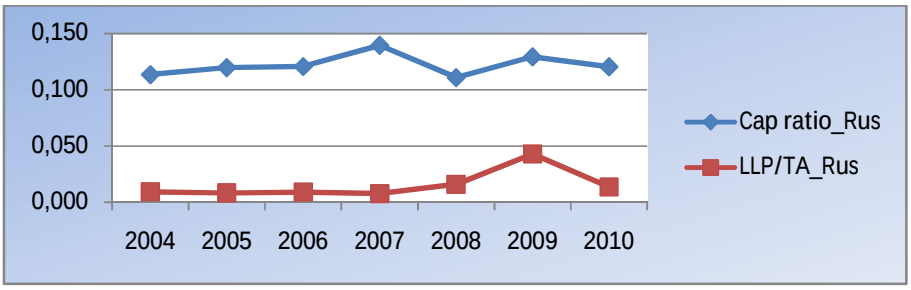
Graph 3. Capital ratio and LLP/TA (Kazakh banks)



Graph 4. Capital ratio and LLP/TA (Ukrainian banks)



Graph 5. Capital ratio and LLP/TA (Russian banks)



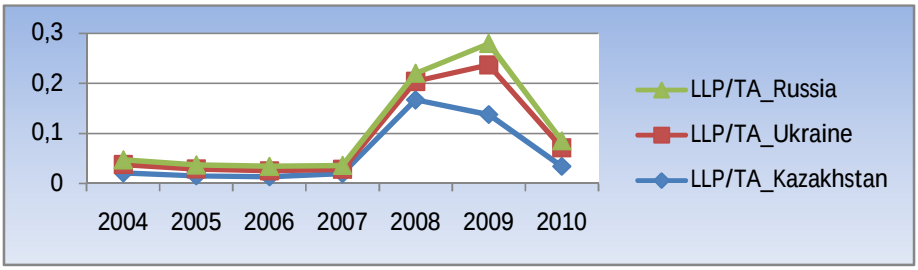
From Graphs 3, 4 and 5 we can see that Kazakhstani banks show the most vivid evidence of negative co-movement of capital ratio and loan loss provisions. This could be explained by the fact that the three system forming banks were near to bankruptcy which led the banks to create a significant level of specific loan loss provisions in the conditions of decreasing capital (Saenko,2010). In the case of other Kazakhstani banks we assume that they may use general loan loss provisions to improve their capital ratios.

In this regard we think that we have indicated a negative correlation between CAP and LLP for our sample because of the mixed effect from: the increase of general loan loss provisions for

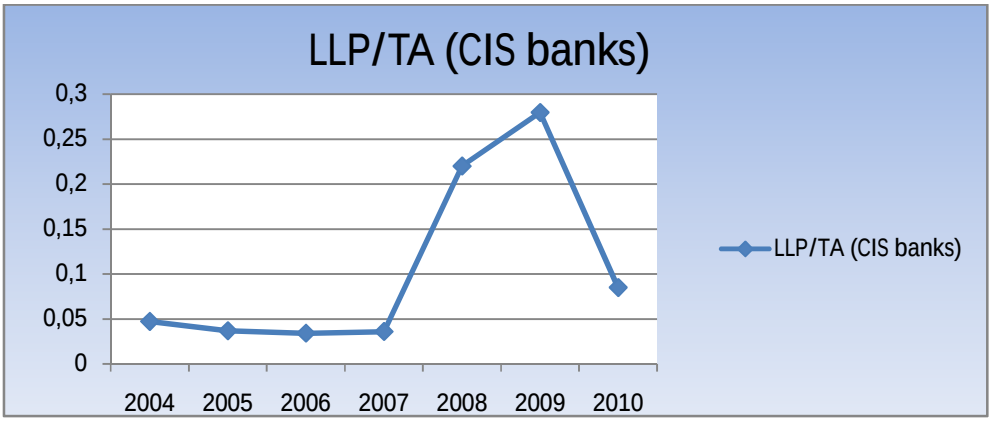
some banks; increase of specific loan loss provisions because of increased bad loans for other banks; decrease of specific loan loss provisions because of increased number of restructured loans and improvement of capital ratios due to government support and injections of additional capital to the capital of foreign banks' subsidiaries by their head offices.

Lagged dependent variables are significant meaning that loan loss provisions are adjusted by CIS banks gradually (Bouvatier &Lepetit, 2008). Surprisingly, the sign for lagged dependent variable is negative which is the opposite of Laeven & Majnoni (2003) and Bouvatier &Lepetit (2008) research findings. A negative correlation between LLP and $LLP_{i,t-1}$ implies that loan loss provisioning starts to grow as a reaction for identified losses while by the next period their level decreases and all these adjustments reflect a deterioration of the loans quality determined in the previous period. We can see this dynamic of loan loss provisions change for all three countries separately on Graph 6 and the common trend on Graph 7.

Graph 6. LLP/TA of Kazakh, Ukrainian and Russian banks.



Graph 7. LLP/TA of CIS banks (combination of Kazakh, Ukrainian and Russian banks)



We suggest that the reason for CIS banks results could be restructuring of debt which leads to the decrease of specific loan loss provisions due to changing the loan's risk classification category to an improved one. According to Batalova (2010) in 2008 the Central Bank of Russia implemented the special regulation for restructured loans. According to this regulation in case the loan has been recognized as restructured loan, banks are not obliged to lower the classification category of loan and therefore create additional capital. Besides she argues that it is better for banks to transfer loans from non-standard to restructured loans rather than to return the loan amount after the company announced its bankruptcy since in such cases a bank will be able to retrieve only about 30-50% of the principal amount. Gribanova (2009) expresses the same point of view in relation to Kazakhstan stating that because of an increase of bad loans and provisions, banks capital decreases, therefore banks tend to increase the number of restructured loans. Even if restructured loans are still subject to the creation of provisions the rate of provisioning is lower than in the case of bad loans.

Conclusion

In this paper we have aimed to test whether loan loss provisioning systems of CIS banks are pro-cyclical. The overall results provide evidence that CIS banks increase their provisions during bad times and decrease them during upturns. This outcome is consistent with the most part of the findings made in the reviewed literature. Confirmation of the pro-cyclicality hypothesis has been an expected outcome of our testing since regulation of CIS banks has the capacity for bank discretional actions and accounting standards to a greater extent is based on the backward looking approach.

However we have also documented signs of counter-cyclical provisioning behaviour. Namely loan loss provisions increase together with loans growth. We have explained such results by the peculiarity of provisioning regulation in Russia and Ukraine. It relates to the requirement to create provisions for standard loans. The test's results have shown that positive correlation

between loan loss provisions and loans to total assets ratio can only mitigate the overall pro-cyclical effect of the loan loss provisions but cannot overcome it.

The income-smoothing hypothesis has not been confirmed for CIS banks implying that CIS banks do not use loan loss provisions to smooth their earnings. This result is in strict opposition to the findings of much existing researches. We have explained this phenomenon by the fact that only a few CIS banks have access to the global capital markets therefore, in general, CIS banks are not interested in smoothing the volatility of their earnings. We think that this outcome is not surprising since we have mentioned before that CIS banking systems are quite young and still in the process of integration to the global market.

The capital management hypothesis is confirmed, namely we have documented a negative correlation between capital ratio and loan loss provisions. According to the empirical research which was devoted to the testing and explanation of the capital management hypothesis and was described by us in Chapter One, the current findings could be the result of the loan loss provisions increasing when capital ratios are low implying that banks manipulate general loan loss provisions in order to improve capital ratios. However taking into account the fact that regulation in Ukraine and partially in Russia leaves less discretion in creating general loan loss provisions we conclude that general loan loss provisions could not be the only source of the capital management. Indeed, we have found out that CIS banks are concerned with decreasing bank capital because of the increased number of bad loans, which started to increase the number of restructured loans leading to a fall in loan loss provisions and therefore improvement of the capital ratio. At the same time the capital of CIS banks has been supported by the government and foreign banks which have their subsidiaries in CIS through the additional capital injections. Such support was aimed at strengthening banks capital. In addition we assume that banks also tend to underestimate the level of specific loan loss provisions taking into account that loan classification procedures are discretional actions in all three countries. Finally all the above

mentioned actions increase the banks' capital ratio and diminish the level of the loan loss provisions.

Therefore taking into consideration the empirical results of our research we can document that we have found confirmation of pro-cyclicality and capital management hypotheses but discovered no evidence of income-smoothing among CIS banks. However the lack of income-smoothing among CIS banks is a question of time and as soon as a number of banks completed IPO has increased, further research may find positive correlations between earnings before taxes and provisions and loan loss provisions. The reason for this is that bank regulations of CIS countries to some extent create opportunities for bank discretional actions in creating loan loss provisions. Therefore even if income-smoothing according to Bikker & Metzemakers (2005) can have mitigating effects on the pro-cyclicality of provisions it is still a measure which manages to hide the true picture of the banks financial position and therefore in this sense is far from the idea of dynamic provisioning system which can strengthen the financial stability of the bank.

While the process of provisioning contains judgmental element banks managers will manipulate provisions to satisfy their own needs.

Based on the conclusions of the existing empirical research we can conclude that counter-cyclical bank provisioning behaviour implies appropriate provisioning regulation leaving less opportunities for discretional actions by the bank mangers and the forward looking approach for credit risk assessment leading to the creation of provisions that can accumulate buffer funds during good times in order to use them during downturns.

Therefore we would recommend to all three CIS countries improvement of their provisioning systems in the above named directions.

Kazakhstan is on its way to implementing some core principles of Basel III in order to overcome pro-cyclical requirement for banks embedded in Basel II. By 2013 Kazakhstan is planning to

implement dynamic reserves and change capital requirements by including in calculation of capital ratios buffer capitals meaning that creation of a cushion for possible poor economic conditions will be required by the bank regulation.(FSA, press-release N.239)

As we have already mentioned before, Russia for homogenous group of standard loans and Ukraine for all types of standard loans have fixed the minimum size of general loan loss provisions. This requirement is aimed at the creation of buffer funds for bad times. Therefore we would recommend for Russian banks also create loan loss provisions also for non-homogenous loans.

All three countries have rules for creation of loan loss provisions nevertheless we assume that there are still possibilities for discretional actions. For example, according to World Bank (2003) collateral in Russia is also used to determine the loans risk category and in this regard bank manager can determine the loan as secured even if it is unsecured. Besides, in Kazakhstan at present creation of general loan loss provisions is a discretional action implying that banks can create such provisions at their own discretion. Therefore we think that more detailed provisioning regulation could be helpful in improvement of loan loss provisioning behaviour from pro-cyclical to counter-cyclical.

However it is worth to remembering that CIS countries' economies are not yet mature with less developed stock exchange markets and real sectors meaning that the banking sector is important one for further development of the countries. In this regard any changes in bank regulation aimed to implement counter-cyclical provisioning rules may lead to the an increase of banking costs and ultimately to the decreased levels of lending. Hence we recommend that CIS banks to implement balanced provisioning systems which will take into consideration all factors which follow after the proposed improvements.

References

1. Ahmed A., Takeda C., Thomas S. (1999), 'Bank loan loss provisions: a re-examination of capital management, earning management and signalling effects'. *Journal of accounting and economics*. 28(1999) 1-25.
2. Barisitz S., Lahnsteiner M. (2010), 'Russian banks on the route of fragile recovery'. Financial stability report, 20- December 2010.
3. Bashmakov I. (2011) 'Will it be economic growth in Russia in 21 century?'. *Voprosy economiki*. №3, 2011.
4. Batalova A.(2010), 'Ring lifgebuoy: will restructuring of debts help business to survive during downturn'. 'Rossiskaya gazeta'-Economika URFO, No. 5117 (38), 25.02.2010.
5. Beatty A., Liao S.(2009), 'Regulatory capital ratios, loan loss provisioning and pro-cyclicality'. August, 2009.Social science research network. http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1463374
6. Belyakov A.(2002), 'Reserves for losses- economical essence and account for the taxation purposes'. Methodical center of Central bank of Russia. May, 2002.
7. Bhat N.(1996), 'Banks and income smoothing: an empirical analysis'. *Applied financial economics*. 1996,6, 505-510.
8. Bikker J.A., Metzemakers P.A.J.(2005), 'Bank provisioning behavior and procyclicality', *International Financial Markets, Institutions and Money*, 15(2005) 141-157.
9. Bogetic Z., Smits K.,Budina N., Wijnbergen S. (2010), 'Long-term fiscal risks and sustainability in an oil-rich country. The case of Russia'. The World bank. March 2010
10. Bouvatier V., Lepetit L.(2008), 'Banks' procyclical behavior: Does provisioning matter?', *International Financial Markets, Institutions and Money*, 18(2008) 513-526.
11. Buzdalin A. (2007), 'IPO of banks: future without past'. Bankovskoe delo. N.6, 2007.
12. Cavallo M., Majnoni G.(2001), ' Do banks provision for bad loans in good times? Empirical evidence and policy implications', June 2001. The World Bank.

13. Central Bank of Russian Federation (CBRF), web-site: http://www.cbr.ru
14. Central Bank of Russian Federation (CBRF) (2003). The method of capital determination for credit organizations'. The rules of Central Banks of Russian Federation. N. 215-P dd 10.02.2003
15. de Lis, F.S., Martinez Pages, J.,Saurina J.(2001), 'Credit growth, problem loans and credit risk provisioning in Spain'. BIS papers no.1, 331-353.
16. Dorbec A. (2010), 'Russia: to build confidence'. *Economic research-BNP Paribas*. July-August 2010.
17. Doronkin M.,Kiryanova K, Volkov S. (2011), 'Development of Russian banking system in 2005-2010. Rise and fall. Analytical review'. ExpertRa. Rating agency.
18. Dzhalilova A.(2007), 'IPO as the instrument of competition'. *Delovoy Kazakhstan*. N.37(84), 28 September 2007.
19. Economy Watch (2011). 'Russia industry sectors'. http://www.economywatch.com
20. Expert Ra, rating agency (2007). 'Финансовые рынки стран СНГ: риски и сопоставление рейтингов'. June 2007 http://www.raexpert.ru/rankingtable/?table_folder=/researches/cis/table3/
21. Expert group and informational and analytical centre of Association of Ukrainian Banks (AUB), (2010), 'The lessons of banking crisis 2008-2009 and the ways of banking sector's transformation in Ukraine'. Khvilya, 2011, http://hvylya.org/analytics.
22. Federal State Statistics Service (Rosstat), web-site: http://www.gks.ru
23. Fillat J.L., Montoriol-Garriga J.(2010), 'Addressing the pro-cyclicality of capital requirements with a dynamic loan loss provision system'. Supervision, Regulation, and Credit. Federal Reserve Bank of Boston, September 15, 2010.
24. Financial Supervision Agency of Kazakhstan (FSA,2006). Order No. 296 dd 25.12.2006. 'Regarding rules for classification of assets, contingent liabilities and creation of provisions (reserves) against them.'

25. Financial Supervision Agency of Kazakhstan (FSA). Report. 2009
26. Financial Supervision Agency of Kazakhstan (FSA). Report 2010.
27. Financial Supervision Agency of Kazakhstan. (2011). Current status of banking sector of Kazakhstan in tables and graphs as of 01.01.2011.
28. Floro D. (2010), 'Loan loss provisioning and the business cycle: does capital matter? Evidence from Philippine Banks'. Department of economic research, Bangko Sentral ng Pilipinas. Version dd 15 March 2010.
29. Galindo A., Rojas-Suarez L. (2011), 'Provisioning requirements in Latin America: Where does the region stand?'.Inter-American Development bank. Country Department. Andean group. Policy brief No. 119, January 2011.
30. Ghafar Ismail A., Tan Be Lay A. (2002), 'Bank loan portfolio composition and the disclosure of loan loss provisions: empirical evidence from Malaysian banks'. *Asian Review of Accounting*, Volume 10, Number I – 2002
31. Gonzales J.E.(2009), 'The fundamentals of procyclicality of the financial system', *Economic newsletter, Banko Sentral ng Pilipinas*, No.09-03, July 2009.
32. Goel, A. M., Thakor, A. V. (2002), 'Why do firms smooth earnings?'. J. Bus., forthcoming.
33. Gribanova S.(2009), 'Rescue of credit history'. *Expert Kazakhstan*, No.32(223)/24 August 2009. http://expert.ru/kazakhstan/2009/32/dolgi/
34. Hsieh M., Shen C., Lee C. (2008), 'Bank provisioning, business cycles and bank regulations: a comprehensive analysis using panel data'. *Banks and Bank Systems*, Volume 3, Issue 4, 2008.
35. InfoMine, research group, association of independent experts in the field of mineral resources, metallurgy and chemical industry (2010), 'Review of Ukrainian ferrous metallurgy'. Moscow, 2010.

36. Interfax (2010), 'Russia does not afraid of 'Basel''. September 2010. http://www.interfax.ru/business/txt.asp?id=154810
37. Intergovernmental statistical committee, 2011 http://www.cisstat.com/rus/ciscountry1.htm
38. International Monetary Fund (IMF,2004). 'Republic of Kazakhstan: Financial system stability assessment-Update including reports on the observance of standards and codes on the following topics: banking supervision and anti-money laundering and combating the financing of terrorism.' *IMF country report* No. 04/268. August 2004.
39. International Monetary Fund (IMF,2005), 'Ukraine-2005 Article IV consultation preliminary conclusions of the mission'. August 2,2005.
40. International Monetary Fund (IMF, 2010). *IMF Country Report No. 10/241,* 'Republic of Kazakhstan: 2010 Article IV Consultation—Staff Report; Public Information Notice on the Executive Board Discussion; and Statement by the Executive Director for Kazakhstan' . July 2010
41. International Monetary Fund Survey online (IMF survey,2010), 'Kazakhstan on Road to Recovery, But Banking System Still Weak'. August 17, 2010.
42. Ivanova N., Godunova M, Kozlov K.(2010), 'Review of economical situation in Kazakhstan'.*Byulleten tsentra macroeconomicheskikh issledovani Sberbanka Rossii*. May 2010.
43. Kazakhstan Financial Review December 2010, Kazkommertsbank, http://en.kkb.kz/page/KazakhstanInBrief
44. Kim M., Kross W.(1998), 'The impact of the 1989 change in bank capital standards on loan loss provisions and loan write-offs', *Journal of accounting and economics,* 25 (1998) 69-99.
45. Kirchner R., Giucci R., Rubia C., Kravchuk V.(2011), 'The banking sector in Ukraine: Past developments and future challenges'. *German advisory group, Institute for economic research and policy consulting. Policy paper series.* March 2011, Berlin/Kiev.

46. Kosenkova K. (2011), 'Analysis of the influence of the economic crisis on variation of debt stability of economy of the Russian Federation with reference to external debts of the Russian Federation to non-residents in 2008-2010'. *Scientific journal of KUBGAU*. No 63(03),2011.
47. Laeven L., Majnoni G.(2003), 'Loan loss provisioning and economic slowdowns: too much, too late?'. *Journal of financial intermediation.* 12(2003), 178-197.
48. Lee S.H., Haque M.M. (2011), ' The pro-cyclical effects of bank capital on bank lending: a case of Kazakhstan'. *International Review of Business Research Papers* Vol. 7. No. 3. May 2011. pp. 94 - 111
49. Malyukova M., Ess A., Trofimova E.(2011), 'Problems of asset quality slow down recovery of Ukrainian banking sector'. Standard and Poors, 2011. www.standardandpoors.ru
50. Mileva E.(2007), 'Using Arellano-Bond dynamic panel GMM estimators in Stata. Tutorials with examples using Stata 9.0'. Economic department. Fordham University. July, 2007.
51. Ministry of economic development and trade of Republic of Kazakhstan (MEDT, 2010). History of credit ratings of Kazakhstan.
52. Ministry of Finance of Russian Federation.2011. http://www.minfin.ru
53. National Bank of Kazakhstan, http://www.nationalbank.kz/
54. National Bank of Ukraine (NBU,1998), 'The rules for creation of loan loss provisions'. N.122, 27.03.1998.
55. National Bank of Ukraine, Main indicators of bank activities, 2011. http://www.bank.gov.ua/ENGL/Bank_supervision/dynamics_e.htm
56. Nuttall C. (2008), 'Analysis: Falling commodity prices to hit Kazakhstan hard in 2009'. *Silk road intelligencer. News and analysis from Kazakhstan.* December 2008.

http://silkroadintelligencer.com/2008/12/21/falling-commodity-prices-to-hit-kazakhstan-hard-in-2009/

57. Peresetsky A.(2010), 'Bank cost efficiency in Kazakhstan and Russia'. *BOFIT discussion papers*,2010.
58. Perez D., Salas-Fuma's V.,Saurina J.(2008), 'Earnings and capital management in alternative loan loss provision regulatory regimes', *European accounting review*. Vol 17, No. 3, 423-445.
59. Pirani S. (2011), 'Basel III bank rules should be tougher, Marchenko says'. *Emerging markets. News, analysis and opinion.* 21.05.2011 http://www.emergingmarkets.org/Article/2832228/Financial-Markets/Basel-III-bank-rules-should-be-tougher-Marchenko-says.html
60. Press release # 239 : the Agency of the Republic of Kazakhstan on regulation and supervision of financial market and financial organizations – its conceptual view of the implementation of capital adequacy requirements for banks in accordance with the latest recommendations made by the Basel Committee on Banking Supervision. FSA.
61. Rules of Central Banks of RF (2004). 'Procedures of loan loss reserves creation'. 26 March 2004.
62. Rules of prudential requirements for second tier banks. Order of National Bank of Republic of Kazakhstan (NBRK). N. 213, June 2002.
63. Saenko A.(2010), ' Banking sector: direction to gradual recovery'. *Rating agency Expert Ra*,Kazakhstan. Almaty 14 January 2010.
64. Sood H.A.E. (2011), 'Loan loss provisioning: regulatory capital management, income smoothing and pro-cyclicality'. Lancaster University Management school. June 2011.
65. .State statistics service of Ukraine (Ukrstat), web-site: http://www.ukrstat.gov.ua/

66. The constructive project. The foundation for civil society institution support and development. 'Macroeconomic review 2009 results: crisis as the time for reckoning'. 1st March 2010. http://constructive-project.org/ru/analysis/1.htm
67. UPLIFT India association (2001). 'Loan loss provision. Understanding and accounting of loan loss provision'. March, 2001.
68. Wikipedia http://ru.wikipedia.org/wiki
69. World Bank (2003). Bank loan classification and provisioning practices in selected developed and emerging countries. World Bank working paper No.1. March 2003.
70. Zhou Yunxia (2007) '*Bank loan loss provisions and capital management under the Basel Accord*' . A thesis submitted for the degree of Doctor of Philosophy. Department of finance and accounting, Business school, National university of Singapore.

APPENDIX 1:

Descriptive statistics of key regression variables.

```
-------------------------------------------------------------------------------
      log:  I:\dissertation data\Regression data\1408_1.log
      log type:  text
      opened on:  14 Aug 2011, 14:41:29
. use "I:\dissertation data\Regression data\1408.dta", clear
. summarize LLP l.LLP  Equity Loans Profit GDP Unempl Dum_var LNdebt, separator(0)
    Variable       Obs        Mean    Std. Dev.       Min        Max
-------------------------------------------------------------------------------
         LLP
         --.        448    .0260872    .0537556  -.0826396   .4987237
         L1.        384    .0262578    .0561219  -.0826396   .4987237

      Equity        448    .1181972    .1023081  -1.254542   .3593823
       Loans        448    .6398984    .3622852    .062618   7.601308
      Profit        448    .0365006    .0672638  -.4328313   .7821481
         GDP        448    .0447321     .059915      -.151       .121
      Unempl        448    .0728638    .0083327       .058       .088
    Dum_var         448        .125    .3310886          0          1
      LNdebt        448   -.6911263    1.126262  -3.765847   .5080217

. log close
      name:  <unnamed>
      log:  I:\dissertation data\Regression data\1408_1.log
      log type:  text
     closed on:  14 Aug 2011, 14:48:12
-------------------------------------------------------------------------------
```

APPENDIX 2:

Regression results.

---

name: <unnamed>

log: I:\dissertation data\Regression data\1908_1.log

log type: text

opened on: 19 Aug 2011, 00:22:47

. xtset Bank Year

panel variable: Bank (strongly balanced)

time variable: Year, 2004 to 2010

delta: 1 unit

. xtabond LLP Equity Loans Profit GDP Unempl Dum_var LNdebt, lags(1) twostep vce(robust) artests(2)

Arellano-Bond dynamic panel-data estimation Number of obs = 320

Group variable: Bank Number of groups = 64

Time variable: Year

Obs per group: min = 5

avg = 5

max = 5

Number of instruments = 23 Wald chi2(8) = 1007.52

Prob > chi2 = 0.0000

Two-step results

(Std. Err. adjusted for clustering on Bank)

LLP	Coef.	WC-Robust Std. Err.	z	P>|z|	[95% Conf.	Interval]
LLP						
L1.	-.2965529	.1038176	-2.86	0.004	-.5000317	-.0930742
Equity	-.2985975	.1239758	-2.41	0.016	-.5415856	-.0556093

Loans	.0373266	.0033328	11.20	0.000	.0307943	.0438588
Profit	-.1012837	.1014258	-1.00	0.318	-.3000746	.0975072
GDP	-.4836829	.1278647	-3.78	0.000	-.7342931	-.2330728
Unempl	.9759108	.3707467	2.63	0.008	.2492607	1.702561
Dum_var	-.0435977	.0163214	-2.67	0.008	-.0755871	-.0116083
LNdebt	.0128709	.0044815	2.87	0.004	.0040873	.0216545
_cons	.0055364	.0185992	0.30	0.766	-.0309174	.0419902

Instruments for differenced equation

GMM-type: L(2/.).LLP

Standard: D.Equity D.Loans D.Profit D.GDP D.Unempl D.Dum_var D.LNdebt

Instruments for level equation

Standard: _cons

. estat abond

Arellano-Bond test for zero autocorrelation in first-differenced errors

Order	z	Prob > z
1	-1.9689	0.0490
2	-.28582	0.7750

H0: no autocorrelation

. log close

name: <unnamed>

log: I:\dissertation data\Regression data\1908_1.log

log type: text

closed on: 19 Aug 2011, 00:23:38
